# TERRESTRIAL ANIMAL ASSESSMENT FOR THE PROPOSED REHABILITATION OF THE STEENBRAS WATER TREATMENT PLANT ACCESS ROAD, CITY OF CAPE TOWN

CAPENSIS

in association with

Adam Labuschagne

25 May 2025

REPORT PREPARED FOR

ZUTARI

**NATIONAL LEGISLATION AND REGULATIONS GOVERNING THIS REPORT**

This is a 'specialist report' and is compiled in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, 2014, as amended.

**APPOINTMENT OF SPECIALIST**

Capensis Ecological Consulting (Pty) Ltd (Capensis) was appointed by Zutari to provide faunal specialist services for the proposed rehabilitation of the Steenbras Water Treatment Plant Access Road, City of Cape Town, Western Cape Province.

**CONDITIONS RELATING TO THIS REPORT**

The content of this report is based on the authors best scientific and professional knowledge as well as available information. Capensis Ecological Consulting (Pty) Ltd reserves the right to modify the report in any way deemed fit should new, relevant or previously unavailable or undisclosed information become known to the author from on-going research or further work in this field, or pertaining to this investigation.

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**DETAILS OF THE SPECIALIST**

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**Expertise**

- Qualifications: BSc (Zoology), MSc (Ecology and Evolutionary Biology)
- Ecologist with 4 years' experience in the field of ecological surveys
- Experience in field surveys in tropical Asia, temperate Europe, and the CFR.

**THE SPECIALIST**

I, Adam Edward Labuschagne, as the appointed specialist hereby declare/affirm the correctness of the information provided or to be provided as part of the application, and that we:

- in terms of the general requirement to be independent:
- other than fair remuneration for work performed/to be performed in terms of this application, have no business, financial, personal or other interest in the activity or application and that there are no circumstances that may compromise my objectivity; or
- in terms of the remainder of the general requirements for a specialist, am fully aware of and meet all of the requirements and that failure to comply with any the requirements may result in disqualification;
- have disclosed/will disclose, to the applicant all material information that have or may have the potential to influence the decision of the Department or the objectivity of any report, plan or document prepared or to be prepared as part of the application;
- have ensured/will ensure that information containing all relevant facts in respect of the application was/will be distributed or was/will be made available to interested and affected parties and the public and that participation by interested and affected parties was/will be facilitated in such a manner that all interested and affected parties were/will be provided with a reasonable opportunity to participate and to provide comments;
- have ensured/will ensure that the comments of all interested and affected parties were/will be considered, recorded and submitted to the Department in respect of the application;
- have ensured/will ensure the inclusion of inputs and recommendations from the specialist reports in respect of the application, where relevant;
- have kept/will keep a register of all interested and affected parties that participate/d in the public participation process; and
- are aware that a false declaration is an offence in terms of regulation 48 of the 2014 NEMA EIA Regulations.
  Note: The terms of reference of the review specialist must be attached.

Signature of the specialist:

Name of company: Capensis Ecological Consulting (Pty) Ltd

Date: 25 May 2026

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## 1. INTRODUCTION

An application for environmental authorisation is underway for the proposed rehabilitation of the Steenbras Water Treatment Plant Access Road, City of Cape Town. The project description provided by Zutari is as follows: The City of Cape Town (CoCT) proposes the rehabilitation/repair of a damaged section "Slope 1" of the Steenbras Water Treatment Plant (WTP) Access Road on Farm Faure 933, where the slope instability occurred as a result of flood damage. To address the slope damage two slope stabilisation methods have been considered for the repair/rehabilitation of Slope 1: (1) the Anchored gabion wall and (2) Terramesh retaining wall. The purpose of assessing these methods is to determine the most environmentally and technically feasible for the proposed repair of Slope 1.

**Preferred Alternative:** Anchored Gabion Wall. This option involves a gabion wall founded 5 m from the road edge (**Figure 1**). To stabilize the wall on the steep slope, 25 mm to 32 mm steel anchors are to be installed, extending 6 m to 9 m into the underlying rock. Minimal disturbance to the existing road is expected and limited backfill will be required behind the wall. The gabion baskets can either be left exposed with a hand-placed stone finish or be grouted to achieve a solid concrete-like appearance. The wall is expected to be approximately 5 m high based on the ground profile at the time of the investigation. This option is considered because of its natural integration with the surrounding environment and that allows for permeability and vegetation growth over time.

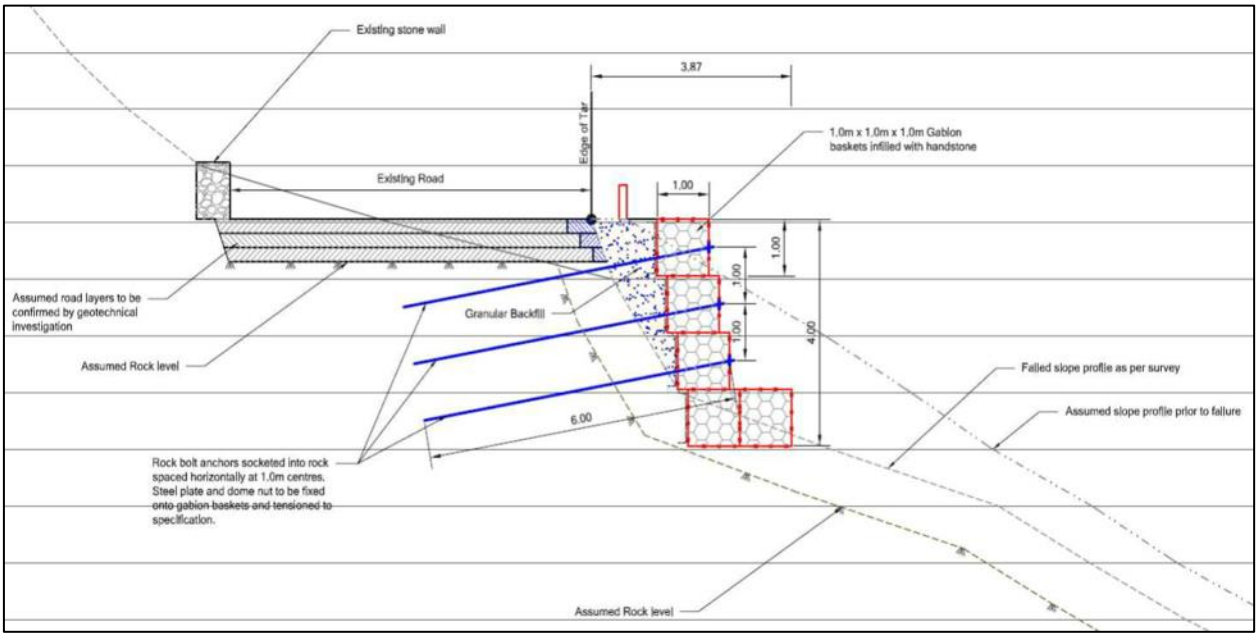


**Figure 1**: Anchored gabion wall concept (Ingerop, 2024)

**Alternative 1: Terramesh Retaining Wall**

This option involves using Terramesh baskets to build a retaining structure along the road edge (**Figure 2**). Terramesh baskets typically provide increased stability when compared with traditional gabion baskets due to the welded tail reinforcement. A portion of the existing roadway will need to be demolished to bench the 2 m long reinforcement tail into the slope, requiring lateral support to prevent destabilisation of the road. Excavation will pass through the talus under burden and proper shoring will be necessary. The final height of the Terramesh wall is expected to be between 4 m and 5 m based on the ground profile at the time of the investigation.

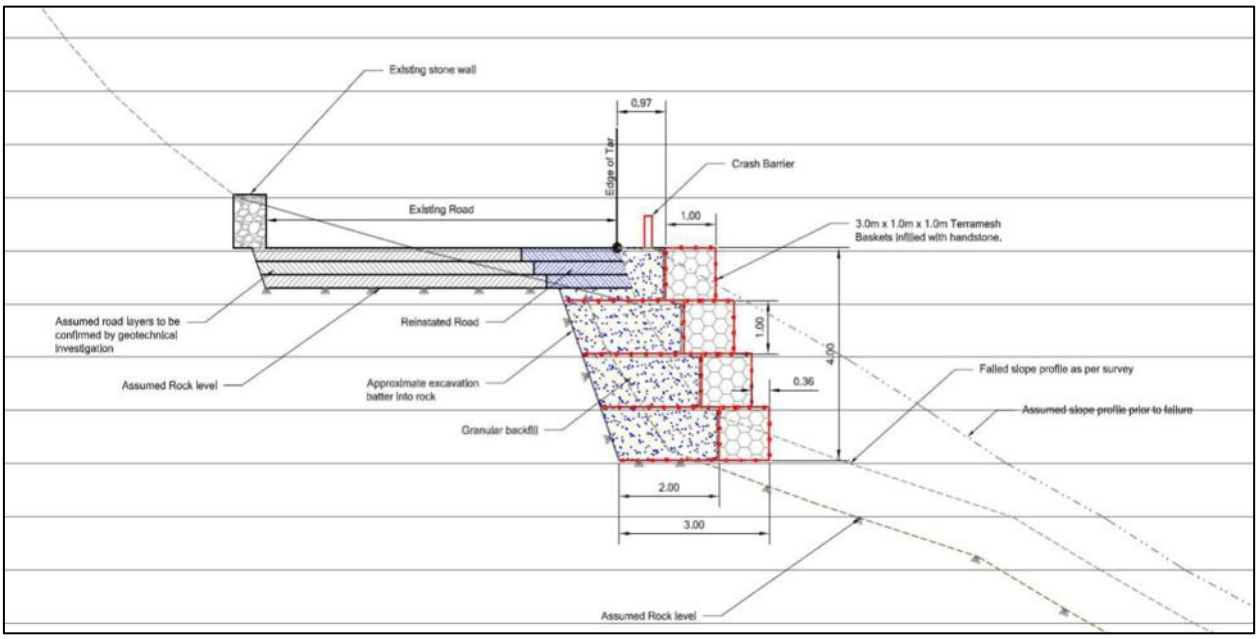


**Figure 2**: Terramesh retaining wall concept (Ingerop, 2024)

Based on the site conditions and constraints, the Anchored gabion wall has been identified as the preferred alternative for the rehabilitation/repair of slope 1. Capensis Ecological Consulting (Pty) Ltd (Capensis) was commissioned by Zutari to carry out the faunal specialist study in accordance with the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.

## 2. PROTOCOL FOR DETERMINING LEVEL OF REPORTING

The new Protocols of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended (NEMA) prescribe general requirements for undertaking an initial site sensitivity verification and the protocols for the assessment and minimum reporting requirements of environmental impacts (Government Gazette 2020). The sensitivity of the site was predetermined using the Department of Forestry, Fisheries, and the Environment (DFFE) screening tool (https://screening.environment.gov.za/screeningtool/). The area surrounding the proposed road rehabilitation of the Steenbras Water Treatment Works has been classified as 'High' sensitivity from

an animal species theme perspective (Figure 3). This level of sensitivity requires a Terrestrial Animal Species Specialist Report to be submitted as part of the application for Environmental Authorization (EA), unless the on-site sensitivity can be shown to be Low. The sensitivity level is based on the potential presence of five Species of Conservation Concern (SCC) (Table 1). The site is deemed to be 'High' due to the likely presence of several faunal SCC, thereby necessitating a Terrestrial Animal Species Specialist Report.

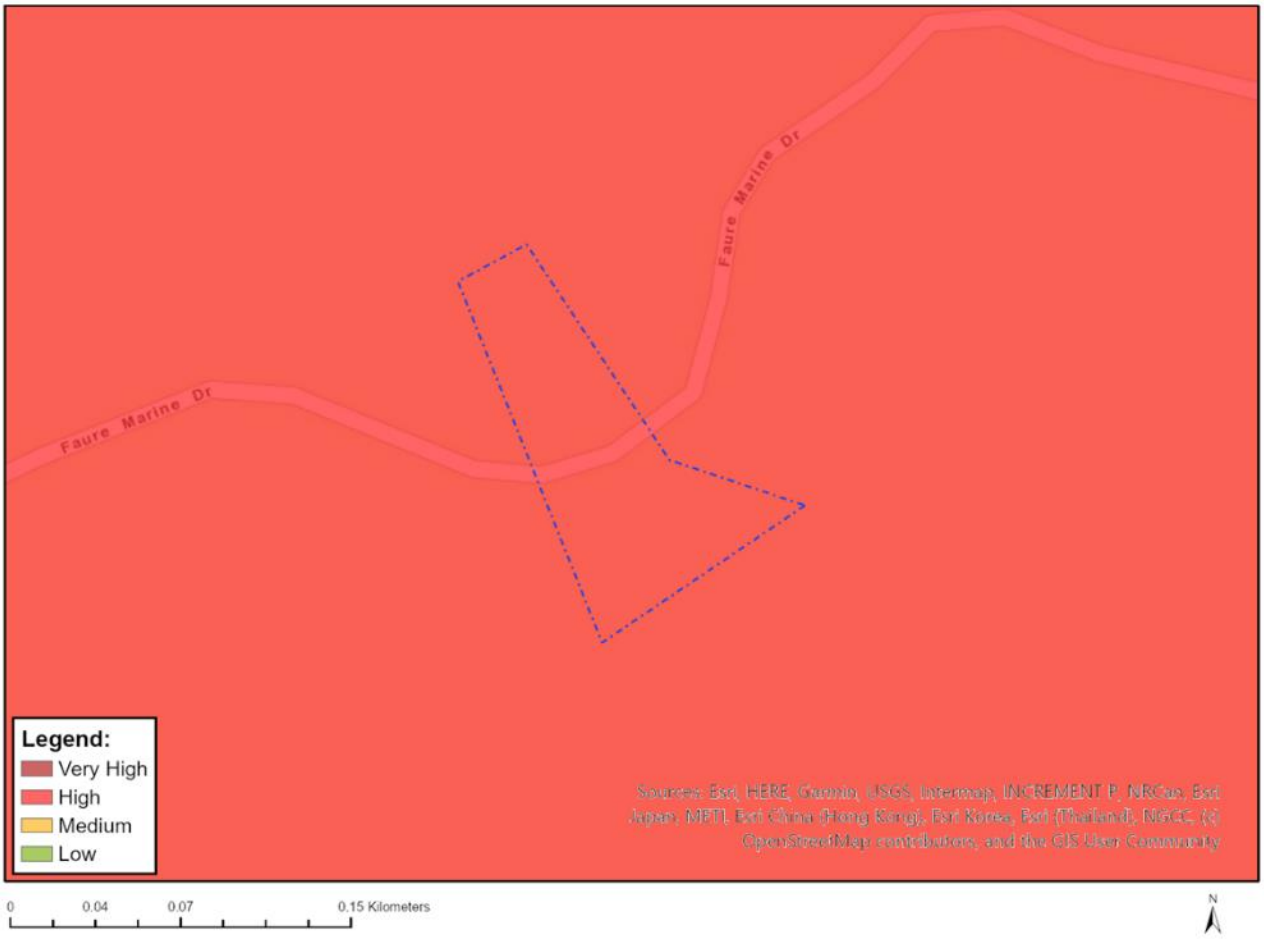


**Figure 3.** The map of Animal Species Sensitivity based on the national screening tool (accessed from https://screening.environment.gov.za/).

**Table 1.** Sensitivity features highlighted by the national screening tool (accessed from https://screening.environment.gov.za/).

| Sensitivity | Feature (s) |
|---|---|
| High | Aves - *Aquila verreauxii* |
| Medium | Aves – *Circus maurus* |
| Medium | Aves – *Sarothrura affinis* |
| Medium | Invertebrate – *Frankenbergerius opacus* |
| Medium | Invertebrate – *Aneuryphymus montanus* |

# 3. TERMS OF REFERENCE

## 3.1 GENERAL

Botanical assessments must follow guidelines set out in the following documents:

- Department of Environmental Affairs and Development Planning (DEA&DP) Guidelines for Involving Biodiversity Specialists in the EIA Process (Brownlie, 2005).
- Ecosystem Guidelines for Environmental Assessment in the Western Cape (Cadman et al., 2016).
- The requirements of CapeNature for providing comments on agricultural, environmental, mine planning and water-use related applications (Turner, 2013).
- Procedures for the assessment and minimum criteria for reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and 44 of the National Environmental Management Act (Government Gazette, 2020).
- Protocol for the Assessment and Reporting of Environmental Impacts on Terrestrial Biodiversity (Government Gazette 43855, 2020). Terrestrial Plants Species Specialist Assessment Report
- Amendment to the Protocols for the Specialist Assessment Minimum Report Content Requirements for Environmental Impacts and terrestrial Animal and Plant Species in terms of Sections 24(5)a and (h) and 44 of the National Environmental Management Act, 1998. and Reporting of Environmental Impacts on Terrestrial Biodiversity (Government Gazette 49028, 2023).
- Species Environmental Assessment Guideline. Guidelines for the implementation of the Terrestrial Fauna and Terrestrial Flora Species Protocols for environmental impact assessments in South Africa (SANBI, 2022).

## 3.2. SPECIFIC

The specific terms of reference followed for the vegetation and plant species are as follows:

- Conduct a site visit and determine the site's environmental sensitivity, and review the sensitivity identified by the DFFE Screening Tool;
- Identify and describe biodiversity patterns at community and ecosystem level (main vegetation type, plant communities in the vicinity and threatened/vulnerable ecosystems), at species level (threatened Red List species, presence of alien species) and in terms of significant landscape features;

- Assess the local and regional importance of the vegetation communities and plant species.
- Determine the implications that the proposed project has for the 2023 Western Cape Spatial Biodiversity Plan.
- Describe the sensitivity of the site and its environs and map these resources.
- Identify any areas not suitable for construction activities (No-Go Areas) and related buffers that should be observed.
- Describe the direct, indirect and cumulative botanical impacts (both before and after mitigation) and provide an assessment of the significance of the impacts.
- Describe the measures to mitigate any impacts, and an indication of whether or not the measures (if implemented) would change the significance of the impact.

# 4. METHODOLOGY, LIMITATIONS AND ASSUMPTIONS

The study area was visited on the 3rd of April 2026 and surveyed on foot. Sample waypoint positions and tracks were obtained using a Garmin *etrex* 10 GPS. Photographs were taken and georeferenced by recording a corresponding GPS point using the Garmin GPS. A total of 20 waypoints were recorded within the site footprint of 0.63 ha, giving a sampling density of 32 waypoints per hectare.

Notes on general habitat condition, connectivity, and disturbances were made and used to inform the habitat suitability assessments for potential faunal species of conservation concern that may occur at the site or in the surrounding landscape. During the field survey, any opportunistic observations of fauna were recorded, along with any observations of the presence of fauna, such as scats, tracks, burrows, etc.

The delineation and mapping of habitat units at the site was conducted based on a combination of field observations and a study of available aerial/satellite imagery.

The following sources have been used to inform this study:

- *Site boundaries:* The site boundary for the development footprint were provided by Zutari.
- Department of Environmental Affairs and Development Planning (DEA&DP) Guidelines for Involving Biodiversity Specialists in the EIA Process (Brownlie, 2005).
- Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes, Government Notice No. 320 (Gazetted 20 March 2020).
- Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Animal Species, Government Notice No. 1150 (Gazetted 30 October 2020).

- South African National Biodiversity Institute (SANBI). 2022. Species Environmental Assessment Guideline. Guidelines for the implementation of the terrestrial fauna and terrestrial flora species protocols for environmental impact assessments in South Africa. South African National Biodiversity Institute, Pretoria. Version 3.1 2023.
- *Vegetation Types*: Based on *The Vegetation of South Africa, Lesotho and Swaziland* (VEGMAP) (Mucina & Rutherford, 2006). The South African National Biodiversity Institute (SANBI) has updated the mapping for the VEGMAP (2024) and these shapefiles have been used.
- *Biodiversity planning*: The City of Cape Town Biodiversity Spatial Plan (2024) is used to assess the conservation importance of the affected habitats within the City of Cape Town Metro Area. Ground-truthing is an essential component in terms of determining the habitat condition.
- *Important species*: The presence or absence of threatened (i.e. species of conservation concern) and ecologically important species informs the ecological condition and sensitivity of the site. Presence/absence data for the area around the site was drawn from Global Biodiversity Information Facility (GBIF; https://www.gbif.org/) and iNaturalist (https://www.inaturalist.org/). The latest conservation status of species is checked on The IUCN Red List of Threatened Species (//www.iucnlist.org.); Red List of Mammals of South Africa, Lesotho and Swaziland (Child et al., 2016); The Regional Red Data Book of Birds (https://www.birdlife.org.za/red-data-book/) (Lee *et al.,* 2025); Red List of South Africa Species (for reptiles, amphibians and invertebrates) (www.speciesstatus.sanbi.org); National Environmental Management: Biodiversity Act (Act No. 10 of 2004); Threatened or Protected Species List (Notice 389 of 2013).

It is assumed that the absence of a specific fauna species, at a particular time, does not necessarily indicate that 1) the species does not occur there; 2) the species does not utilise resources in that area; or 3) the area does not play an ecological support role in the ecology of that species. Because the likelihood of detecting SCC during environmental authorisation assessments is low, the precautionary principle was applied when assessing habitat suitability for these species in the project area. That is, if potentially suitable habitat exists in proximity of known locations for the species and current threats are low, the species is assigned a high likelihood of occurrence and assumed to be present. The site visit was undertaken in during late summer/early autumn. This seasonal period is deemed to impose limitations for the detection of amphibian species (as these species breed during the wet cape winters). Furthermore, the site was visited during the morning, with cool mist and cloudy conditions dominant during the survey period. This is assumed to impact the detectability of reptilian species whose activity is curtailed by the cool weather conditions.

# 5. STUDY AREA

## 5.1. LOCALITY AND SITE AREA

The Steenbras Water Treatment Works Access Road is located on the west facing slope of the Hottentots-Holland mountains, above the suburb of Gordons Bay, City of Cape Town. The surrounding area is largely untransformed, consisting of steep sand stone slopes (35 degrees) Figure 4, *top right*) supporting intact Kogelberg Sandstone Fynbos. The access road is a two-lane road that runs from the R44/Faure Marine Drive up to the Steenbras Water treatment Works. Downslope of the road there are areas of rock scree/unconsolidated material below the Steenbras Pass Road, left over from construction of the pass; these areas have not yet been significantly colonised by extant vegetation (Figure 4, *bottom left*). The section of road to be rehabilitated is located at the confluence of two non-perennial watercourses (Figure 4, *bottom right*); it is due to damage caused during intense precipitation events that these water courses flooded and caused significant erosional damage to the road.

**Figure 4.** (*top left*) image from slope above Steenbras Pass, looking down to Faure Marine Road/R44; (*top right*) Steep slopes supporting intact Kogelberg Sandstone Fynbos; (*bottom left*) Unconsolidated scree below the Steenbras Pass Road; (*bottom right*) Non-perennial watercourses that converge at the Steenbras Pass Road.


**Figure 5.** The location of the study area within the context of the City of Cape Town Municipality, overlaid on an Open Street Map ™ image.


**Figure 6.** The location of the study area in relation to the closest roads and urban developments, overlaid on a Google Earth ™ aerial image.

## 5.2. LANDSCAPE AND GEOLOGY

The site area is moderately to very steep, with a slope of 35 degrees. Located on the west facing slopes of the Hottentots Holland mountain range, the underlying geology of the site consists of sandstones belonging to the Table Mountain Group. The soils across most of the site are extremely thin or non-existent, consisting primarily of coarse gravel and cobbles (Figure 7). Acidic lithosol soils derived from Ordovician sandstones of the Table Mountain Group (Cape Supergroup). Kogelberg Sandstone Fynbos is described as having "*Deep sandy blankets (whitish, nutrient-poor acidic sand) develop in depressions and on slopes resisting erosion. Land types mainly Ic, Ib and Gb*" as per Rebelo *et al*., in Mucina & Rutherford, 2006. A small shale band runs south-east, upslope of the site however this appears to have limited to no effect on the geology of the site area.

Two small non-perennial watercourses occur within the study area, converging just upslope of the Steenbras Pass Road, before flowing beneath the road and down the slope towards the coast. The northern watercourse was almost entirely dry; however, the southern watercourse did have limited running water which supported several rock pools. It is likely that this supply of water was due to recent late summer/early autumn rains.

**Figure 7.** Very course, gravelly substrate found across the site. Soil is depth is thin to non-existent.

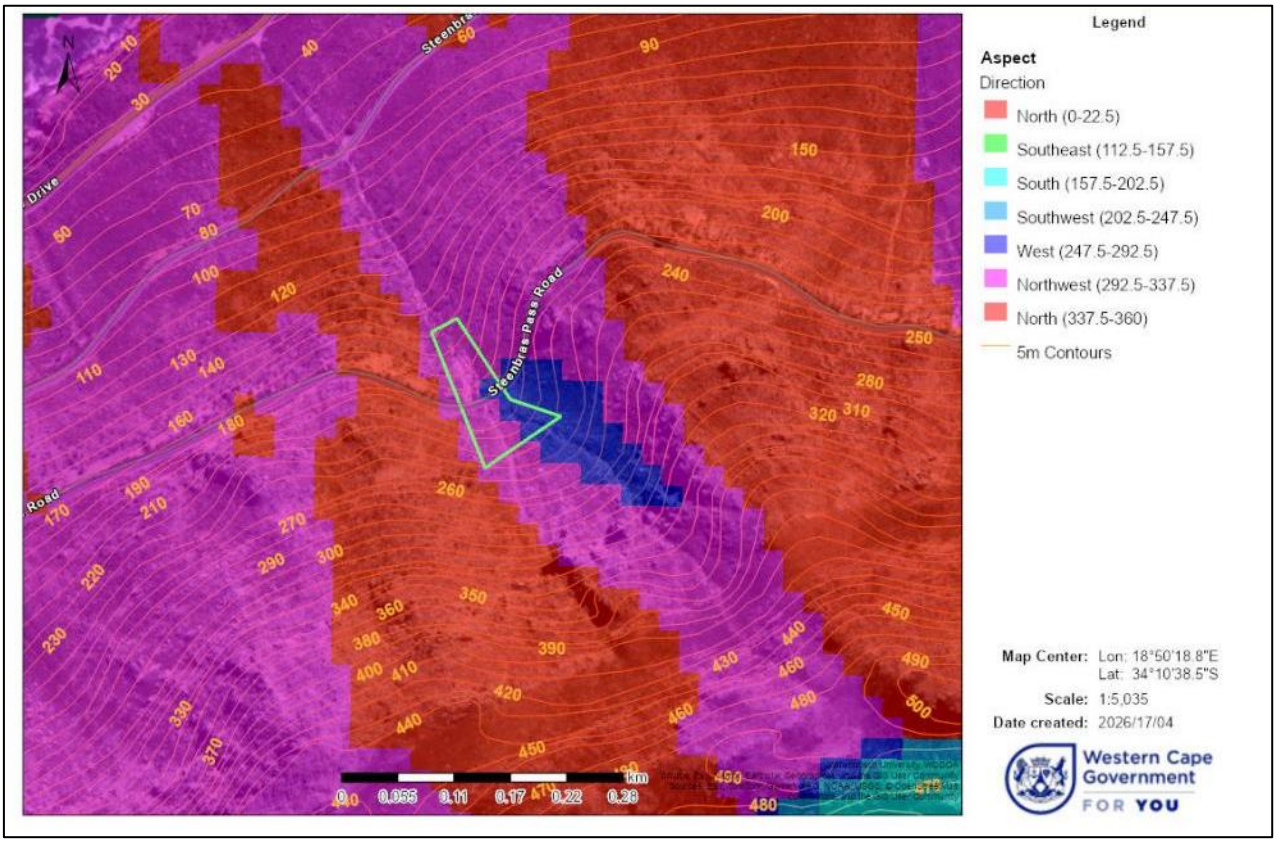


**Figure 8.** Map depicting the topography and aspect of the site derived from Cape Farm Mapper (https://gis.elsenburg.com/apps/cfm/)

# 6. INITIAL SITE SENSITIVTY VERIFICATION

## 6.1 DESKTOP ANALYSIS

### *6.1.1 Satellite Imagery*

Prior to the initial site visit, satellite imagery was examined to determine the presence of general habitat features and to assess possible disturbance regimes that would impact the presence of animal species in the study area. The flood event that caused significant damage to the Steenbras Pass Road occurred between November 2022 and January 2023, as indicated by historic satellite imagery obtained from Google Earth ™ (Figure 9). The intense flooding caused significant erosion along the two non-perennial watercourses within the site, removing beds of Palmeit *Prionium serratum* downslope of the road as well as adjacent riverine habitat. These habitats have recovered somewhat since this event (Figure 9, *bottom*).


**Figure 9.** Aerial imagery of the site before and after the flood event that undermined the road. The top image is from November 2022; the middle image is from January 2023; and the bottom image is from March 2025. Historic imagery derived from Google Earth ™.

### *6.1.2 Potential Species of Conservation Concern*

Prior to the initial site visit, a list of potential animal species was compiled for the area around the site. A 10km boundary, with the site as the centre point, was used to extract presence/absence data from iNaturalist, whilst a 25km boundary was used to extract presence/absence data from the IUCN Red List of Threatened Species (see Section 4. Methodology Limitations, & Assumptions). The results from these sources were amalgamated and can be found in Appendix 1. Potential SCC for the study area were extracted from this species list and are displayed in Table 2, accompanied by a summary of each species' habitat preference, threat status and likelihood of occurrence within the study area. This list is complimented by SCC identified by the DFFE screening tool report.

Probability of occurrence at the site and in the surrounding landscape is based on the following parameters:

- Habitat requirements: Most threatened species have very specific habitat requirements (Table 1). The presence of these habitats in and adjacent to the site was evaluated.
- Habitat status: The status or ecological condition of available habitat was assessed. Often a high level of habitat degradation will negate the potential presence of sensitive species.
- Habitat linkage: Dispersal and movement between natural areas for breeding and feeding are important population-level processes. Habitat connectivity to surrounding natural habitat and corridors was evaluated to determine the likely persistence of species of conservation concern.

The probability of occurrence is presented in the following categories:

- Recorded: Any species of conservation concern observed/documented during the field visit;
- Probable: The species is likely to occur on the site due to suitable habitat and resources being present on the site;
- Possible: The species may occur on the site, or move through the site (in the case of mobile species), due to potential habitat and/or resources;
- Unlikely: the species will not likely occur on the site due to lack of suitable habitat and resources, or significant differences in its Area of Occupancy (AOO) compared to its Extent of Occurrence (EOO).

Local or National threat statuses are derived from *The 2025 Red Data Book of Birds of South Africa, Lesotho and Eswatini* (Lee *et* al., 2025), Child et al., (2016) for mammals, and Mercenero et al., (2013) for butterflies. International threat statuses were obtained from the IUCN Red List of Threatened Species (https://www.iucnredlist.org/).

**Table 2**. Summary of SCC threat status, habitat requirements, and likelihood of occurrence. Note that species highlighted in yellow were identified by the screening tool.

| Class | Species | Common Name | Threat Status | | Habitat Requirement | Habitat Present | Likelihood of Occurrence |
|---|---|---|---|---|---|---|---|
| | | | International | Local | | | |
| Amphibia | *Arthroleptella landdrosia* | **Landdros Moss Frog** | **Near Threatened**<br>Unknown | **Near Threatened**<br>Unknown | High altitude, steep sloped fynbos habitat with an annual rainfall >750 mm. Does not survive in degraded areas. Eggs are laid in wet vegetation in fynbos seeps and marginally in forest habitat. | Yes | Likely. Intact habitat containing wet vegetation/seeps along the stream downslope of the road |
| Amphibia | *Breviceps gibbosus* | **Cape Rain Frog** | **Vulnerable**<br>Deacreasing | **Near Threatened**<br>Stable | Burrowing frog of renosterveld and fynbos. Can persist in transformed or modified landscapes such as pine plantations and suburban gardens. Not associatd with waterbodies | Yes | Likely. Habitat present. |
| Amphibia | *Cacosternum capense* | **Cape Caco** | **Near Threatened**<br>Decreasing | **Near Threatened**<br>Decreasing | Undulating low-lying areas with poorly drained loamy to clay soils. Breeds in shallow natural pools of vleis and depressions in flat low-lying areas, with eggs attached to submerged vegetation in temporary water. It can tolerate some disturbance, and survives in many regularly ploughed wheat fields, | No | Highly Unlikely. Topography is too steep and soil too free draining to support this species. |
| Amphibia | *Poyntonia paludicola* | **Montane Marsh Frog** | **Near Threatened**<br>Stable | **Near Threatened**<br>Unknown | Mountain fynbos habitat and is restricted to areas with high rainfall (2,000–3,000 mm of rain per year). It breeds in shallow streams and seepages. | No | Unlikely. Whilst appropriate seepage habitat is present, the mean annual precipitation is too low to support this species (estimated 829 mm at the site) |
| Amphibia | *Microbatrachella capensis* | **Cape Flats Frog** | **Endangered**<br>Decreasing | **Critically Endangered**<br>Decreasing | Sandy, coastal lowland fynbos heathland, and it is not generally found in anthropogenic habitats. It has specialized habitat requirements associated with natural, seasonal, seepage pools and vleis, and depends on black, acidic waters for breeding. This species can tolerate very limited habitat disturbance. | No | Highly Unlikely. Unsuitable topography (too steep) to support this species |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Amphibia | *Sclerophrys pantherina* | **Western Leopard Toad** | **Endangered**<br>Unknown | **Endangered**<br>Unknown | Forages in fynbos heathland, farmland, suburban gardens, and urban open areas, although always in close proximity to freshwater habitats. ass breeding events take place annually, during July–September, in large wetlands, vleis, dams, and sluggish water in lowland fynbos heathland, as well as, in altered habitats with permanent waterbodies, and occasionally temporary waterbodies that retain water well into summer. | No | Highly Unlikely. Lack of suitable habitat and outside known range for this species. |
| Amphibia | *Xenopus gilli* | **Cape Platanna** | **Endangered**<br>Decreasing | **Endangered**<br>Decreasing | It is found only in Cape fynbos heathland, is a winter breeder (July to October), and aestivates if waterbodies dry up. It does not tolerate alteration of its habitat, and the larvae are very sensitive to changes in water quality. | No | Highly Unlikely. Lack if sufficiently deep water or appropriate substrate in which to aestivate. |
| Aves | *Afrotis afra* | **Southern Black Bustard** | **Vulnerable**<br>Decreasing | **Vulnerable**<br>Decreasing | mainly in Renosterveld and Strandveld, and in the Nama and Succulent Karoo biomes. The species shows a distinct preference for natural habitats over transformed land, although it is seen in cultivated land where little natural habitat remains available to it | No | Highly Unlikely. Lack of suitable habitat. |
| Aves | *Anthropoides paradiseus* | **Blue Crane** | **Vulnerable**<br>Decreasing | **Vulnerable**<br>Decreasing | Open grassland habitats and ecotones between the Grassland and Nama Karoo biomes. Also commonly found in agricultural landscapes, especially in Western Cape. Normally roost in wetlands or dams. | No | Highly Unlikely. Lack of suitable habitat. |
| Aves | *Aquila verreauxii* | **Verreaux's Eagle** | **Least Concern**<br>Decreasing | **Vulnerable**<br>Decreasing | Constructs roosts on rocky outcrops or cliffs. Distribution is highly dependent on prey, in particular Rock Hyrax/Dassies however they will take any medium sized mammal, large birds, tortoises or even carrion | Yes | Highly Likely. Known observations in the immediate area (high territorial fidelity amongst adults) implies that this species is highly likely to be present in the area. |
| Aves | *Buteo trizonatus* | **Forest Buzzard** | **Near Threatened**<br>Stable | **Near Threatened**<br>Stable | Afromontane forests and plantations of alien trees, mostly Pinus species, but also Eucalyptus species | No | Highly Unlikely. Lack of suitable habitat. |
| Aves | *Bradypterus sylvaticus* | **Knysna Warbler** | **Near Threatened**<br>Deacreasing | **Vulnerable**<br>Decreasing | Edges of Afro-temperate forests and in thick, tangled vegetation along the banks of watercourses or drainage lines in forest patches in the Fynbos Biome. It has adapted to thickets of introduced Rubus | No | Highly Unlikely. Lack of suitable habitat. |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | brambles, where it can be locally common, particularly in Western Cape. Birds have recently started to abandon natural, protected forests in favour of narrow belts of suburban riverine woodland with a dense, tangled understorey (Pryke et al. 2011). | | |
| Aves | *Chaetops frenatus* | **Cape Rock Jumper** | **Near Threatened**<br>Deacreasing | **Near Threatened**<br>Deacreasing | High-altitude rocky slopes and ridges, from sea level to 2300 meters above sea level. It prefers areas with low vegetation cover, typically found in recently burnt habitats where vegetation is shorter and less dense | Yes | Highly Likely. Abundant suitable habitat and nearby observations of this species |
| Aves | *Circus maurus* | **Black Harrier** | **Endangered**<br>Decreasing | **Endangered**<br>Decreasing | Favours lowland Fynbos, Strandveld, and Renosterveld but will also utilise mountain Fynbos. Will forage over agricultural landscapes. | No | Unlikely. Lack of suitable habitat for nesting or hunting behaviour. Comparatively rare in mountain fynbos. |
| Aves | *Crithagra leucoptera* | **Protea Canary** | **Near Threatened**<br>Decreasing | **Near Threatened**<br>Decreasing | Confined to the Mountain Fynbos and semi-arid scrub of Western and Eastern Cape. The species is also found in tall streamside bush, forested ravines and gorges, mountain valleys, small forest patches and in semi-arid vegetation at the edge of the Karoo. Diet consist of seeds from a variety of Fynbos species, mostly Protea and Restio. | Yes | Highly Likely. Slopes of the site are dominated by Protea and Restio species, the preferred diet of the Protea Canary. |
| Aves | *Geocolaptes olivaceus* | **Ground Woodpecker** | **Near Threatened**<br>Decreasing | **Near Threatened**<br>Decreasing | Inhabits rocky and boulder-strewn slopes in mountainous regions, usually found in treeless grasslands and shrublands. It is often seen in eroded gullies and along road cuttings. Both sexes excavate nesting holes in vertical earth banks. | Yes | Highly Likely. Known observations in the surrounding landscape and highly suitable habitat present at the site. |
| Aves | *Monticola explorator* | **Sentinel Rock-Thrush** | **Near Threatened**<br>Decreasing | **Least Concern**<br>Stable | Inhabits high-altitude grasslands and heathlands with rocky areas, exposed rocks, and grassy rangelands scattered with stones | Yes | Highly Likely. Abundant suitable habitat and nearby observations of this species |
| Aves | *Neotis denhami* | **Denham's Bustard** | **Near Threatened**<br>Decreasing | **Vulnerable**<br>Decreasing | it inhabits grasslands, grassy Acacia-studded dunes, fairly dense shrubland, light woodland, farmland, crops, dried marsh and arid scrub plains, high rainfall sour grassveld, planted pastures and cereal croplands in fynbos in South Africa. | No | Highly Unlikely. Lack of suitable habitat. |
| Aves | *Polemaetus bellicosus* | **Martial Eagle** | **Endangered**<br>Decreasing | **Endangered**<br>Decreasing | Prefers arid and mesic savannah but are also commonly found at forest edges and in open shrubland. Birds will occupy most | No | Highly Unlikely. Lack of suitable habitat. |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | habitats provided there are adequate tall trees or pylons for nesting and perching. It rarely occurs in mountainous areas. It is known to nest on human-made structures, such as pylons and wind-pumps, and in alien trees. | | |
| Aves | *Sagittarius serpentarius* | **Secretarybird** | **Vulnerable**<br>Decreasing | **Endangered**<br>Decreasing | Open grassland and scrub, with the ground cover shorter than 50 cm and with sufficient scattered trees as roost/nest sites. | No | Highly Unlikely. Lack of suitable habitat. |
| Aves | *Sarothrura affinis* | **Striped Flufftail** | **Least Concern**<br>Decreasing | **Vulnerable**<br>Decreasing | Inhabits dense vegetation with open foraging ground. Primary habitats include upland sourveld grassland dominated by *Themeda triandra* with associated grasses (*Hyparrhenia, Festuca, Tristachya, Cymbopogon*), often with woody elements. In fynbos, occurs in *Psoralea-Osmitopsis* vegetation near water courses | Yes | Possible. *Psoralea – Prionium* vegetation along the stream downslope of Steenbras Road. |
| Aves | *Turnix hottentottus* | **Fynbos Button Quail** | **Least Concern** | **Near Threatened** | Associated with habitats that have low vegetation cover and gentle slopes, primarily in mountain and coastal Fynbos. | No | Unlikely. Fairly old veld and location of the site on steep slope. Rare in the Kogelberg region. |
| Mammalia | *Amblysomus corriae* | **Fynbos Golden Mole** | **Near Threatened**<br>Unknown | **Near Threatened**<br>Unknown | Sandy soils and soft loams in Mountain Fynbos, Grassy Fynbos and Renosterveld of South West Cape. Also in Afromontane forest and southern African moist savanna along the southern Cape coast. | No | Highly Unlikely. Lack of suitable habitat. |
| Mammalia | *Pelea capreolus* | **Grey Rhebok** | **Near Threatened**<br>Decreasing | **Near Threatened**<br>Decreasing | Rocky hills and grassy mountain slopes. | Yes | Highly Likely. Abundant suitable habitat |
| Mammalia | *Aonyx capensis* | **African Clawless Otter** | **Near Threatened**<br>Decreasing | **Near Threatened**<br>Decreasing | predominantly aquatic and seldom found far from permanent water. Fresh water is an essential habitat requirement, not only for drinking but also for rinsing their fur. otters selected habitat characterised by reed beds, boulders and overhanging vegetation. Cape Clawless Otters have been found in towns and cities, and can occupy rivers with high pollution and eutrophication levels. | No | Unlikely. Whilst there is some limited riverine habitat present in the site the scale is insufficient to support this species (too narrow, not deep enough, insufficient open water) |
| Mammalia | *Panthera pardus pardus* | **Cape Leopard** | **Vulnerable**<br>Decreasing | **Vulnerable**<br>Decreasing | Wide habitat tolerance, including woodland, grassland savannah and mountain habitats but also occur widely in coastal scrub, shrubland and semi-desert. | Yes | Possible. Great connectivity to extensive untransformed habitat within the Kogelberg Biosphere reserve. Leopards are known |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | Densely wooded and rocky areas are preferred as choice habitat types. | | from the area however the population density for this species is extremely low in the Cape Mountains. |
| Mammalia | *Otomys laminatus* | **Laminate Vlei Rat** | **Near Threatened**<br>Decreasing | **Near Threatened**<br>Decreasing | Mesic sub-montane grasslands along the Drakensberg foothills and has also been recorded from coastal forests as well as Restio-dominated coastal and mountain fynbos. Specifically, it inhabits moist habitats such as wetlands and marshes. It may also occur in pine plantations. | Yes | Possible. Suitable moist habitat present |
| Reptilia | *Bradypodion pumilum* | **Cape Dwarf Chameleon** | **Near Threatened**<br>Decreasing | **Near Threatened**<br>Decreasing | Occurs in a variety of habitats including fynbos, renosterveld, thicket, riparian vegetation and some exotic and native trees. | Yes | Highly Likely. Abundant suitable habitat |
| Reptilia | *Hemicordylus nebulosus* | **Dwarf Crag Lizard** | **Vulnerable**<br>Stable | **Vulnerable**<br>Stable | Rupicolous; found on vertical rock faces, boulders, or mountain summit, often within 10 m of a stream or seepage. Occurs at altitudes of 1,200-1,500 m in the mistbelt of the Western Cape in the fynbos biome. Restricted to Landdroskop Peak in Hottentots-Holland Mountains. | No | Highly Unlikely. Extremely range restricted species. |
| Insecta | *Ceratogomphus triceraticus* | **Cape Thorntail** | **Near Threatened**<br>Unknown | **Near Threatened**<br>Unknown | Pools in streams, and occasionally in reservoirs. Rocky, shallow rivers, with deposition pools, and possibly farm dams. | Yes | Highly Likely. Abundant suitable habitat. |
| Insecta | *Aneuryphymus montanus* | **Yellow-winged Agile Grasshopper** | **Vulnerable**<br>Unknown | **Vulnerable**<br>Unknown | Associated with fynbos vegetation, where it has been collected "amongst partly burnt stands of evergreen Sclerophyll in rocky foothills". It prefers south-facing cool slopes. | No | Unlikely. Slope is warm to hot north-west facing. Veld age is also too old. |
| Insecta | *Frankenbergerius opacus* | *Frankenbergerius opacus* | **Critically Endangered**<br>Unknown | **Critically Endangered**<br>Unknown | Renosterveld Vegetation on mountain slopes in the Stellenbosch Area. | No | Highly Unlikely. Prefers renosterveld habitat, not mountain fynbos. |

## 6.2. NATIONAL VEGETATION TYPE

***National Vegetation type:*** According to *The Vegetation of South Africa, Lesotho and Swaziland* (VEGMAP) (Rebelo *et al*. 2006 in Mucina & Rutherford, 2006) only one vegetation type is found at the site, Kogelberg Sandstone Fynbos (Figure 10). The landscape and the vegetation type is described by Rebelo et al. (in Mucina and Rutherford, 2006):

| | |
|---|---|
| ***Kogelberg Sandstone Fynbos*** | *"High mountains with steep to gentle slopes, and undulating plains and hills of varied aspect. General appearance of vegetation low, closed shrubland with scattered emergent tall shrubs. Proteoid, ericaceous and restioid fynbos dominate, while asteraceous fynbos is rare. Patches of Cape thicket are common in the northern areas; in the south similar habitats are occupied by scrub fynbos. Numerous seeps and seasonally saturated mountain-plateau wetlands (locally called 'suurvlakte') are very common and support restioid and ericaceous (dominated by Bruniaceae) fynbos."* |

***Ecological drivers***: The key ecological drivers in **Midland and Mountain Fynbos ecosystems** according to Cadman *et al*. (2016) include (1) the natural fire frequency, (2) diversity of habitat and environmental gradients, (3) regional and local natural water drainage patterns and (4) natural grazing and physical soil disturbance.


**Figure 10.** The study area in relation to the Vegetation Map of South Africa (SANBI, 2024) overlain on a Google Earth ™ aerial image, with the study area outlined in red.

## 6.3 BIODIVERSITY PLANS

A key component of the Cape Town Biodiversity Spatial Plan (2025) is the 2024 Terrestrial Biodiversity Network (Cape Nature, 2023); a spatial dataset that shows terrestrial and aquatic features that are essential for conserving biodiversity and maintaining ecosystem functioning within the City of Cape Town. This spatial plan is closely aligned with the Western Cape Biodiversity Spatial Plan (WCBSP) (2023) which is linked to the Western Cape Biodiversity Act 6 of 2021 (WCBA). The WCBSP "*identifies a province-wide network of biodiversity priority areas defined as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs)"* designed to meet conservation objectives. **Table 3** describes the Biodiversity Network spatial categories, how they align with the 2024 Western Cape Biodiversity Spatial Plan (WCBSP) (CapeNature, 2024) categories, and the Land management objectives for each category. The management objectives for each map category are provided in **Table 4.** The site is located entirely within a conservation area (as per the Terrestrial Biodiversity Network), which is surrounded by a Protected Area (Kogelberg Biosphere Reserve) (Figure 11, A). According to the WCBSP the site is located within an area designated as CBA 1 (Figure 11, B)

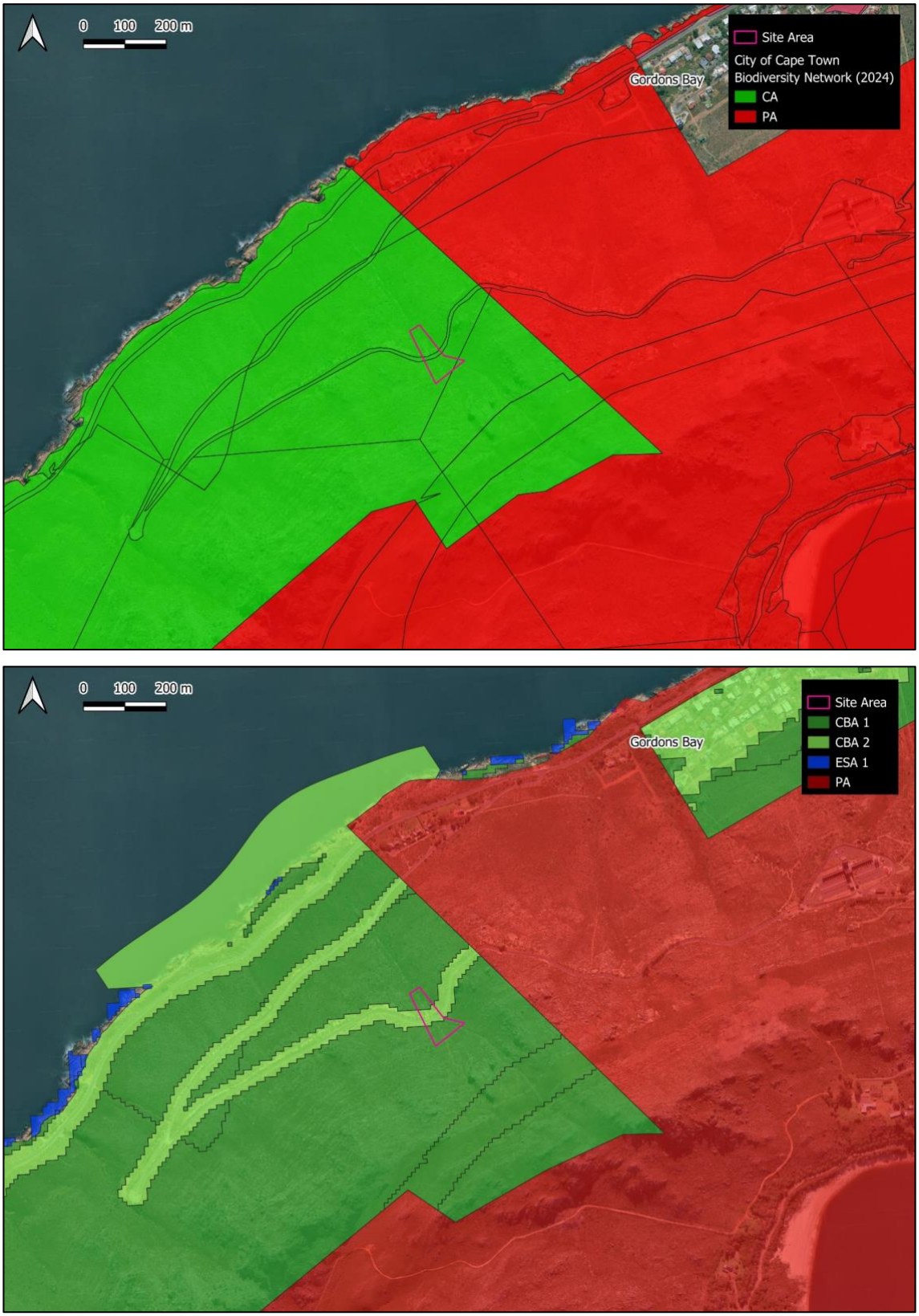


**Figure 11.** The study area in relation to the City of Cape Town Biodiversity Network (CapeNature 2024) (A) and Western Cape Biodiversity Spatial Plan (B) overlain on a Google Earth ™ aerial image, with the study area outlined in red.

**Table 3.** Terrestrial Biodiversity Network Categories, their equivalent categories in other biodiversity spatial plans, and their management objectives.

| BioNet 2024 | CBA Descriptors | MSDF (Map 5B) | PSDF | WCBSP 2023 | National BPA Map | Land Management Objective |
|---|---|---|---|---|---|---|
| PA | Protected Area | Core 1: Protected & Conserved | Core 1 | PA | PA | To be maintained as Protected Areas. |
| CA | Conservation Area | | | | | To be managed and maintained as Conservation Areas or upgraded to Protected Areas where appropriate. |
| CBA 1 | Critical Biodiversity Area 1 (irreplaceable) | Core 1: CBA | | CBA 1 | CBA | To be managed for biodiversity conservation purposes, restored where required and incorporated into the Protected Area network. |
| CBA 2 | Critical Biodiversity Area 2 (optimal) | | | CBA 2 | | To be restored and managed for biodiversity conservation purposes and incorporated into the Protected Area network. |
| ESA 1 | Ecological Support Area 1 | Core 2: ESA | Core 2 | ESA 1 | ESA | To be managed for biodiversity conservation purposes, restored where required. |
| ESA 2 | Ecological Support Area 2 | Buffer 2 | Buffer 2 | ESA 2 | | Current land-use should be maintained, or else restored to a more natural state. |
| ONA | Other Natural Area | Buffer 1 | Buffer 1 | ONA | ONA | As per the CCT District EMF. |
| NNR | No natural habitat remaining | | | NNR | | As per the CCT District EMF. |

**Table 4.** Western Cape Biodiversity Spatial Plan (2024) their definitions, and their management objectives.

| Map Category | Definition | Desired Management Objective | Sub-Category |
|---|---|---|---|
| Protected Area | Areas proclaimed as protected areas in terms of national or provincial legislation. | Must be kept in a natural state, with a management plan focused on maintaining or improving the state of biodiversity. A biodiversity benchmark. | |
| Critical Biodiversity Area 1 | Areas in a natural condition that are required to meet biodiversity targets, for species, ecosystems or ecological processes and infrastructure. | Maintain in a natural or near- natural state, with no further loss of habitat. Degraded areas should be rehabilitated. Only low-impact, biodiversity- sensitive land-uses are appropriate. | River<br>Estuary<br>Wetland<br>Forest<br>Terrestrial |
| Critical Biodiversity Area 2 | Areas in a degraded or secondary condition that are required to meet biodiversity targets, for species, ecosystems or ecological processes and infrastructure. | Maintain in a functional, natural, or near-natural state, with no further loss of natural habitat. These areas should be rehabilitated. | Degraded |
| Ecological Support Area 1 | Areas that are not essential for meeting biodiversity targets but play an important role in supporting the functioning of PAs or CBAs and are often vital for delivering ecosystem services. | Maintain in a functional, near- natural state. Some habitat loss is acceptable, provided the underlying biodiversity objectives and ecological functioning are not compromised. Maintaining and improving protection of areas identified as ESA Water Source and Water Recharge important to secure water resources, particularly in Strategic Water Source Areas (SWSAs). | Foredune<br>Forest<br>Climate Adaptation Corridor<br>Coastal Resource Protection<br>Endangered Ecosystem<br>River<br>Estuary<br>Wetland<br>Watercourse Protection<br>Water Source Protection<br>Water Recharge Protection |
| Ecological Support Area 2 | Areas not essential for meeting biodiversity targets but have an important role in supporting the functioning of PAs or CBAs. Often vital for delivering ecosystem services. | Restore and/or manage to minimise impact on ecological infrastructure functioning; especially soil and water-related service. | Restore from Non-Natural |
| Ecological Support Area: Species Specific Overlay | Terrestrial No Natural Remaining areas that provide a critical support function to a threatened or protected species e.g. cultivated land associated with nesting/roosting sites. | Maintain current land-use or rehabilitate to functional natural area. | Species Specific |
| Other Natural Areas: Natural to Near-Natural | Areas that have not been identified as a priority in the systematic biodiversity plan but retain most of their natural character and perform a range of biodiversity and ecological infrastructure functions. They are still an important part of the natural ecosystem. | Minimise habitat and species loss and ensure ecosystem functionality through strategic landscape planning. Offers flexibility in permissible land-uses, but authorisation required for high-impact land-uses. | Natural to Near-Natural<br>Degraded |
| No Natural Remaining | Areas that have been modified by human activity to the extent that they are no longer natural nor contribute to biodiversity targets. These areas may still provide limited biodiversity and ecological infrastructure functions, even if not currently prioritised for conservation action. | Manage in a biodiversity- sensitive manner, aiming to maximise ecological functionality. Offers the most flexibility regarding potential land-uses, but authorization/s may still be required for high-impact land-uses. | No Natural Remaining |

# 7. SITE INSPECTION

## 7.1 FAUNAL HABITATS PRESENT AT THE SITE

In general, the overall condition across the site can be classified as intact, with small areas of semi-intact and slightly degraded vegetation. The semi-intact and slightly degraded vegetation correspond to the historic disturbance caused by the construction of the Steenbras Pass Road (located within the eroded area directly downslope of the road). The site can be broadly described as intact mountain fynbos, dominated by graminoids (primarily restiods) with two narrow drainage lines/non-perennial water courses that converge beneath Steenbras Pass Road. The riverine/wetland habitat associated with these watercourses is narrow, approximately 3m wide along most of the watercourse.

A description of the various habitat condition classes appears in **Table 5**. Four (4) faunal habitat types were noted at the site (Figure 12). Faunal species observed at the site can be found noted in Appendix 1.

**Table 5.** The habitat condition descriptions used for the vegetation on the site.

| Habitat condition | Description |
|---|---|
| **Intact vegetation** | A true representation of the original vegetation type in terms of structure and species makeup. Minimal soil disturbance. Unlikely to have ever been ploughed. Disturbance may be evident. |
| **Semi-intact** | Closely resembles the original vegetation type in terms of structure and species makeup but has undergone some form of current or historical disturbance. Restoration potential is high. |
| **Degraded** | Only a few species representative of the original vegetation type are present. The vegetation has undergone heavy disturbance. Restoration potential is either low or moderate. |
| **Highly degraded** | The original vegetation is usually absent and has been removed in the past. Only a few remnant or pioneer species are present. Soils usually ploughed in the past. Restoration potential is very low. |
| **Transformed** | No remnant species exist anymore. The landscape is altered irreversibly with no restoration potential. Examples include cultivated farmland and the built environment. |

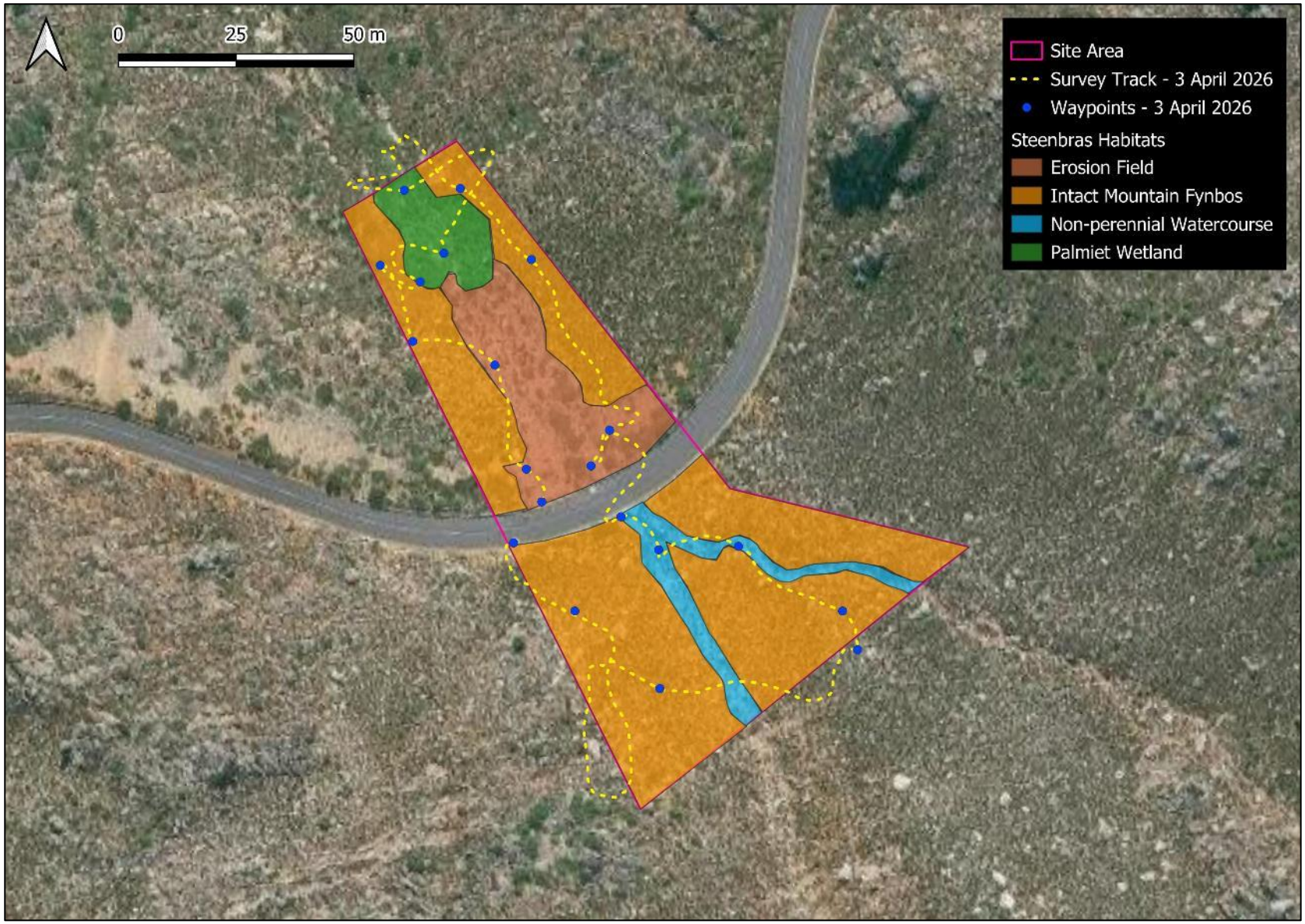


**Figure 12**. Map of habitats found at the site overlain a Google Earth Google Earth ™ aerial image.

### *7.1.1 Palmiet/riverine vegetation*

Downslope of the Steenbras Pass Road, and below the erosion field, the watercourse enters a Palmiet dominated riparian zone/wetland habitat (Figure 13). Approximately 380m$^2$ in extent, this Palmiet *Prionium serratum* community strongly indicates the presence of a perennial stream. Other mesophilic and hydrophilic species found in this habitat include *Psoralea uncinata, Ficinia brevifolia, Capeochloa cincta, Erica distorta, Morella serrata,* and *Cliffortia ruscifolia.* Amongst the dense vegetation are numerous seeps, mossy microhabitats, and small to medium sized pools. These conditions provide optimal habitat for many amphibian species such as Clicking Stream Frog *Strongylopus grayii*, Banded Stream Frog *Strongylopus bonaespei,*, Cape River Frog *Ametia fuscigula*, and De Villier's Moss Frog *Arthroleptella villiersi*. This habitat may be able to support Striped Flufftail *Sarothrura affinis.*

**Figure 13.** Palmiet wetland located downslope of Steenbras Pass Road. Dominated by *Prionium* serratum, this habitat contains many microhabitats, including seeps and pools, which support amphibian species, as well as bird and mammal species.

### *7.1.2 Non-perennial watercourses*

Upslope of the Steenbras Pass Road there are two non-perennial watercourses (Figure 14). The north-eastern drainage line appears to be the drier of the two, likely only flowing during intense precipitation events whereas the south-western drainage line appears to contain water for a greater part of the year. During the site visit the lowest portion of the drainage line contained pools and moist habitats that support amphibian species (Figure 15). The species assemblage surrounding these drainage lines is very similar to the intact mountain fynbos described below, with more mesic or hydric areas supporting species such as *Capeochloa cincta, Erica distorta,* and *Ficinia brevifolia.*

**Figure 14.** Non-perennial watercourses upslope of the Steenbras Pass Road. The riparian vegetation is particularly narrow, almost non-existent on the eastern drainage line.

**Figure 15.** Near the confluence of these watercourses, just above the road, are pools and semi-permanently moist habitats which support several amphibian species including Clicking Stream Frogs and Cape River Frogs.

### *7.1.3 Intact Mountain Fynbos*

Found both above and below Steenbras Pass Road, outside of drainage lines and riverine/wetland habitat, the site supports intact Kogelberg Sandstone Fynbos (Figure 16). The vegetation contains many graminoid species (primarily restios like *Elegia stipularis, Hypodiscus* cf. *argentus,* and *Restio capensis*) interspersed between ericoid shrubs (*Cliffortia carinata*, *Erica serrata,* and larger shrub species such as *Protea laurifolia* and *Heeria argentea.* These species grow in and amongst medium to large sandstone boulders with larger sandstone outcrops located upslope of the site. The abundance of exposed rocks is ideal for species such as Ground Woodpeckers *Geocolaptes olivaceus* and Cape Rock Jumper *Chaetops frenatus* whereas with the sandstone outcrops form optimal habitat for species such as Dassies/Rock Hyrax *Procavia capensis* (the preferred prey item for Verreaux's Eagle *Aquila verreauxii*). Amphibian species such as Cape Mountain Rain Frog *Breviceps montanus* and reptiles such as Cape Crag Lizards *Pseudocordylus microlepidotus* are likely to occur. The high density of *Protea, Leucospermum,* and Restiod species also provides significant foraging for SCC such as Protea Canaries *Crithagra leucoptera*.

**Figure 16.** Intact Kogelberg Mountain Fynbos across the majority of the site. Open slopes are dominated by graminoid species, with larger shrubs such as *Heeria argentea* and *Protea repens* located in fire refugia amongst sandstone boulders.

### *7.1.4 Erosion field*

Approximately 1000m$^2$ in extent, the erosion field sites directly below the Steenbras Pass Road. Dominated by large cobbles and unconsolidated scree, only robust shrub species and newly grown restios are present within this habitat, whilst the margins host intact Kogelberg Sandstone Fynbos (Figure 17). Directly downslope of the road, the slope has been stabilised using sandbags (Figure 18); historic erosion is also visible, with undercutting of gabions used to protect the road also visible. It should be noted that despite the significant disturbance caused by the intense flood event, these erosional processes are natural occurrences on steep mountain fynbos slopes, reshaping watercourses, creating fire refugia, and provide numerous habitat niches as part of a dynamic system. Thus, in the absence of significant anthropogenic pressures, this habitat is not considered to be degraded.

**Figure 17.** Images showing the erosion field downslope of the Steenbras Pass Road. (*top*) shows the extent of the erosion, with cobbles extending approximately 50m down the slope. (*bottom*) Sparsely vegetated in contrast to the rest of the site, supporting robust shrubby species resistant to erosion.

**Figure 18.** The road surface has been stabilised and supported using large sandbags (*left*) Historic erosion can be seen elsewhere below the road, with undercutting of support material visible beneath gabions (*right*).

## 7.2 FAUNAL SPECIES OBSERVED DURING FIELD SURVEY

Opportunistic sampling was used during the during the survey, including target searching of specific microhabitats (turning over rocks, examining seeps etc). The following species, grouped by order, were recorded on site. For a complete species list, see Appendix 1.

In the wetland habitat, three amphibian species were recorded; Cape River Frog *Ametia fuscigula,* Banded Stream Frog *Strongylopus bonaespes*, and Clicking Stream Frog *Stronglylopus grayii.* Two reptile species, Rock Agama *Agama atra* and Cape Crag Lizard *Pseudocordylus microlepidotus* were recorded. Evidence of just one mammal species was observed; multiple scat samples and evidence of foraging behaviour from Chacma Baboon *Papio ursinus*.

23 bird species were observed at the site, including Orange Breasted Sunbird *Anthobaphes violacea*, Cape Grass Bird *Sphenoeacus afer*, Neddicky *Cisticola fulvicapilla,* Southern Double Collared Sunbird *Cinnyris chalybeus*, Cape Rock-Thrush *Monticola rupestris*, Cape Sugar Bird *Promerops afer*, Karoo Prinia *Prinia maculosa*, Red-winged Starling *Onychognathus morio*, Familiar Chat *Oenanthe familiaris*, White Necked Raven *Corvus albicollis*, Cape Spurfowl *Pternistis capensis* , Speckled pigeon *Columba guinea,* Levaillant's Cisticola *Cisticola tinniens,* Red Winged Starling *Onychognathus morio*, Cape Robin Chat *Cossypha caffra,* Southern Double Collared Sunbird *Cinnyris afer*, and Cape Wagtail *Motacilla capensis.*

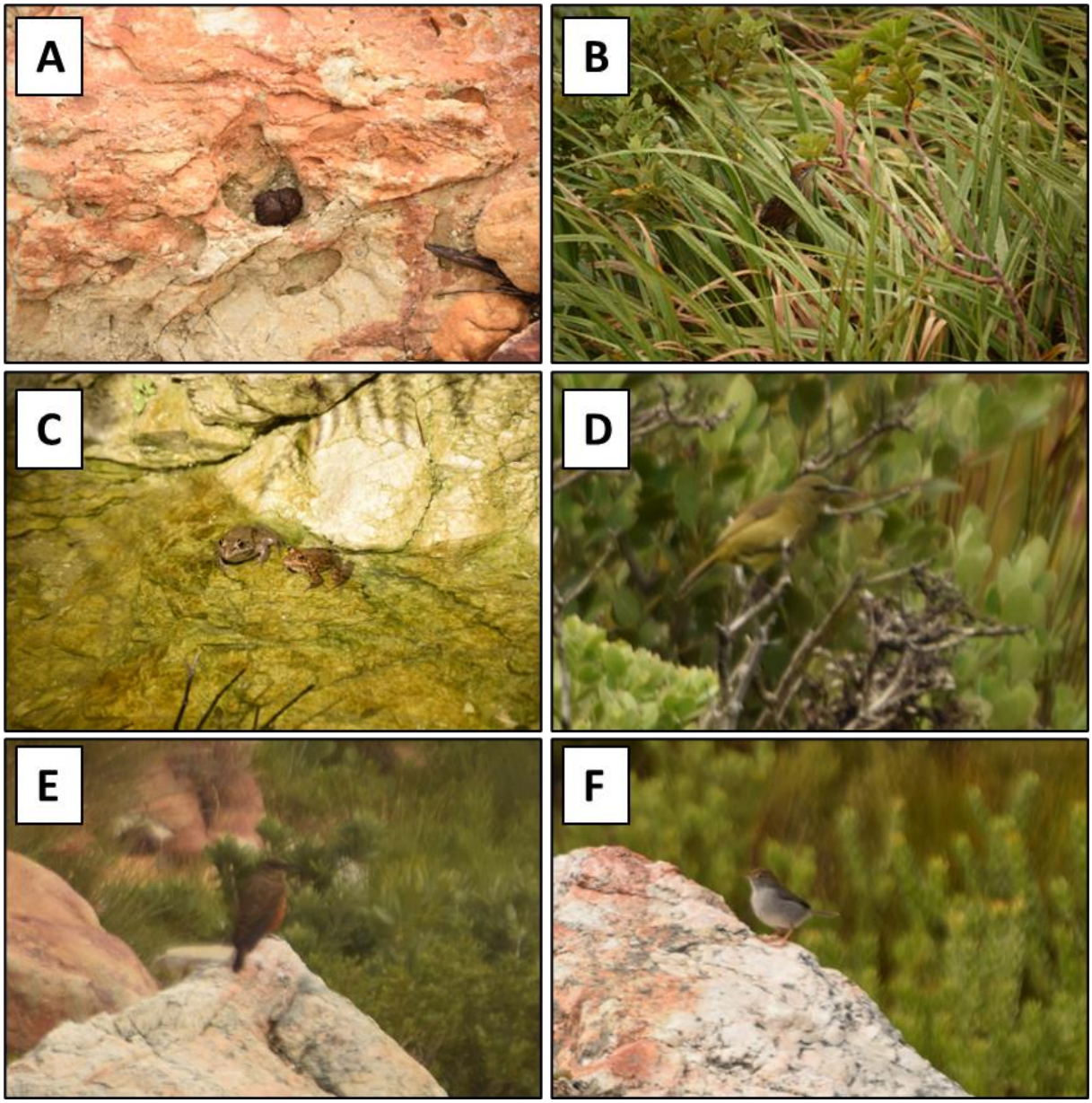


**Figure 19.** Examples of fauna detected during the field survey. (A) *Papio ursinus;* (B) *Sphenoeacus afer;* (C) *Ametia fuscigula* and *Strongylopus* grayii; (D) *Cyanomitra olivacea*; (E) *Monticola rupestris* female; (F) *Cisticola fulvicapilla.* A full species list can be found in Appendix 1.

## 7.3 SPECIES OF CONSERVATION CONCERN

Species of Conservation Concern (SCC) are those listed as threatened (Critically Endangered (CR), Endangered (EN), Vulnerable (VU)), near-threatened and/or are endemic or range restricted. The DFFE Screening Report identified five SCC as potentially occurring at the site (Table 1) with an additional 25 SCC were identified using additional resources (see Chapter 6, subsection 6.1.2). The habitat preference, conservation status, and likelihood of occurrence of each SCC is assessed in **Table 2**, *pg*. 15.

# 8. SITE ECOLOGICAL IMPORTANCE

Site Ecological Importance (SEI) is considered to be a function of the biodiversity importance (BI) of the receptor (species of conservation concern or habitat type present on the site) and its resilience to impacts (receptor resilience [RR]). This is calculated as follows:

$$\mathbf{SEI = BI + RR}$$

Where BI is a function of conservation importance (CI) and the functional integrity (FI) of the receptor as follows:

$$\mathbf{BI = CI + FI}$$

Conservation importance is defined here as:

> *"The importance of a site for supporting biodiversity features of conservation concern present, e.g. populations of IUCN threatened and Near Threatened species (CR, EN, VU and NT), Rare species, range-restricted species, globally significant populations of congregatory species, and areas of threatened ecosystem types, through predominantly natural processes."*

Functional integrity (FI) of the receptor is defined as:

> *"The receptors' current ability to maintain the structure and functions that define it, compared to its known or predicted state under ideal conditions. Simply stated, FI is: 'A measure of the ecological condition of the impact receptor as determined by its remaining intact and functional area, its connectivity to other natural areas and the degree of current persistent ecological impacts."*

**Table 6**. Conservation importance (CI) criteria (Government Gazette No. 43855, 30 October 2020).

| Conservation Importance (CI) | Fulfilling Criteria |
|---|---|
| **Very High** | Confirmed or highly likely occurrence of CR, EN, VU or Extremely Rare or Critically Rare species that have a global EOO of < 10 km2. Any area of natural habitat of a CR ecosystem type or large area (> 0.1% of the total ecosystem type extent) of natural habitat of EN ecosystem type. Globally significant populations of congregatory species (> 10% of global population). |
| **High** | Confirmed or highly likely occurrence of CR, EN, VU species that have a global EOO of > 10 km2. IUCN threatened species (CR, EN, VU) must be listed under any criterion other than A. If listed as threatened only under Criterion A, include if there are less than 10 locations or < 10 000 mature individuals remaining. Small area (> 0.01% but < 0.1% of the total ecosystem type extent) of natural habitat of EN ecosystem type or large area (> 0.1%) of natural habitat of VU ecosystem type. Presence of Rare species. |

| | |
|---|---|
| | Globally significant populations of congregatory species (> 1% but < 10% of global population). |
| **Medium** | Confirmed or highly likely occurrence of populations of NT species, threatened species (CR, EN, VU) listed under Criterion A only and which have more than 10 locations or more than 10 000 mature individuals. Any area of natural habitat of threatened ecosystem type with status of VU. Presence of range-restricted species. > 50% of receptor contains natural habitat with potential to support SCC. |
| **Low** | No confirmed or highly likely populations of SCC. No confirmed or highly likely populations of range-restricted species. < 50% of receptor contains natural habitat with limited potential to support SCC. |
| **Very Low** | No confirmed and highly unlikely populations of SCC. No confirmed and highly unlikely populations of range-restricted species. No natural habitat remaining. |

**Table 7**. Functional Integrity criteria (Government Gazette No. 43855, 30 October 2020).

| **Functional Integrity (FI)** | **Fulfilling Criteria** |
|---|---|
| **Very High** | Very large (> 100 ha) intact area for any conservation status of ecosystem type or > 5 ha for CR ecosystem types. High habitat connectivity serving as functional ecological corridors, limited road network between intact habitat patches. No or minimal current negative ecological impacts with no signs of major past disturbance (e.g. ploughing). |
| **High** | Large (> 20 ha but < 100 ha) intact area for any conservation status of ecosystem type or > 10 ha for EN ecosystem types. Good habitat connectivity with potentially functional ecological corridors and a regularly used road network between intact habitat patches. Only minor current negative ecological impacts (e.g. few livestock utilising area) with no signs of major past disturbance (e.g. ploughing) and good rehabilitation potential |
| **Medium** | Medium (> 5 ha but < 20 ha) semi-intact area for any conservation status of ecosystem type or > 20 ha for VU ecosystem types. Only narrow corridors of good habitat connectivity or larger areas of poor habitat connectivity and a busy used road network between intact habitat patches. Mostly minor current negative ecological impacts with some major impacts (e.g. established population of alien and invasive flora) and a few signs of minor past disturbance. Moderate rehabilitation potential. |
| **Low** | Small (> 1 ha but < 5 ha) area. Almost no habitat connectivity but migrations still possible across some modified or degraded natural habitat and a very busy used road network surrounds the area. Low rehabilitation potential. Several minor and major current negative ecological impacts |
| **Very Low** | Very small (< 1 ha) area. No habitat connectivity except for flying species or flora with wind-dispersed seeds. Several major current negative ecological impacts. |

Once the CI and FI for habitats within the study site has been assessed, the BI can be calculated using the Matrix in Table 8.

**Table 8**. Matrix for calculating Biodiversity Importance (BI) (Government Gazette No. 43855, 30 October 2020)

| Biodiversity Importance (BI) | | Conservation Importance (CI) | | | | |
|---|---|---|---|---|---|---|
| | | Very high | High | Medium | Low | Very low |
| Functional Integrity (FI) | Very high | Very high | Very high | High | Medium | Low |
| | High | Very high | High | Medium | Medium | Low |
| | Medium | High | Medium | Medium | Low | Very low |
| | Low | Medium | Medium | Low | Low | Very low |
| | Very low | Medium | Low | Very low | Very low | Very low |

Lastly, the Receptor Resilience (RR) of the habitats present at the site can be calculated using the criteria in Table 9. The Receptor Resilience (RR) is defined as:

> *"The intrinsic capacity of the receptor to resist major damage from disturbance and/or to recover to its original state with limited or no human intervention."*

**Table 9**. Receptor Resilience criteria (Government Gazette No. 43855, 30 October 2020)

| Receptor Resilience (RR) | Fulfilling Criteria |
|---|---|
| **Very High** | Habitat that can recover rapidly (~ less than 5 years) to restore > 75%28 of the original species composition and functionality of the receptor functionality, or species that have a very high likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a very high likelihood of returning to a site once the disturbance or impact has been removed. |
| **High** | Habitat that can recover relatively quickly (~ 5–10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a high likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a high likelihood of returning to a site once the disturbance or impact has been removed. |
| **Medium** | Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a moderate likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a moderate likelihood of returning to a site once the disturbance or impact has been removed |
| **Low** | Habitat that is unlikely to be able to recover fully after a relatively long period: > 15 years required to restore ~ less than 50% of the original species composition and functionality of the receptor functionality, or species that have a low likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a low likelihood of returning to a site once the disturbance or impact has been removed. |
| **Very Low** | Habitat that is unable to recover from major impacts, or species that are unlikely to remain at a site even when a disturbance or impact is occurring, or species that are unlikely to return to a site once the disturbance or impact has been removed. |

The SEI for each habitat was calculated using the formula **SEI = BI + RR**, and the matrix laid out in Table 10. The interpretation of the SEI for each development actions allowed for each SEI category are outlined in Table 11.

**Table 10**. Matrix for calculating Site Ecological Importance (SEI) (Government Gazette No. 43855, 30 October 2020)

| Site Ecological Importance (SEI) | | Biodiversity Importance (BI) | | | | |
|---|---|---|---|---|---|---|
| | | Very high | High | Medium | Low | Very low |
| Receptor Resilience (RR) | Very high | Very high | Very high | High | Medium | Low |
| | High | Very high | Very high | High | Medium | Very low |
| | Medium | Very high | High | Medium | Low | Very low |
| | Low | High | Medium | Low | Very low | Very low |
| | Very low | Medium | Low | Very low | Very low | Very low |

**Table 11**. Guidelines for interpreting SEI in the context of the proposed development activities (Government Gazette No. 43855, 30 October 2020)

| Site Ecological Importance (SEI) | Interpretation in relation to proposed development activities |
|---|---|
| Very high | Avoidance mitigation – no destructive development activities should be considered. Offset mitigation not acceptable/not possible (i.e. last remaining populations of species, last remaining good condition patches of ecosystems/unique species assemblages). Destructive impacts for species/ecosystems where persistence target remains. |
| High | Avoidance mitigation wherever possible. Minimisation mitigation – changes to project infrastructure design to limit the amount of habitat impacted; limited development activities of low impact acceptable. Offset mitigation may be required for high impact activities. |
| Medium | Minimisation and restoration mitigation – development activities of medium impact acceptable followed by appropriate restoration activities. |
| Low | Minimisation and restoration mitigation – development activities of medium to high impact acceptable followed by appropriate restoration activities. |
| Very low | Minimisation mitigation – development activities of medium to high impact acceptable and restoration activities may not be required. |

## 8.1 SEI FOR SCC HABITATS IN THE STUDY AREA

The SEI for habitats within the study area are evaluated in Table 12. The study area contains the following habitats; Palmiet wetland, non-perennial watercourses, intact mountain fynbos, and erosional field. No SCC were confirmed during the survey, however due to the threat status of the vegetation type (Kogelberg Sandstone Fynbos is Critically Endangered), the intact condition of the majority of the habitat across the site, extensive habitat connectivity, and high receptor resilience, the Site Ecological importance of all habitats within the study area are deemed to be **Very High**.

**Table 12**. Evaluation of SEI for SCC habitats within the study area. BI = Biodiversity Importance, RR = Receptor Resilience.

| Habitat Type | Conservation Importance | Functional Integrity | Receptor Resilience | SEI |
|---|---|---|---|---|
| Palmiet Wetland | **Very High-** Any area of natural habitat of a CR ecosystem type | **Very High** - Very large (> 100 ha) intact area for any conservation status of ecosystem type or > 5 ha for CR ecosystem types. High habitat connectivity serving as functional ecological corridors, limited road network between intact habitat patches. No or minimal current negative ecological impacts with no signs of major past disturbance (e.g. ploughing). | **High -** Habitat that can recover relatively quickly (~ 5–10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a high likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a high likelihood of returning to a site once the disturbance or impact has been removed. | **Very High** |
| Non-perennial Watercourse | **Very High-** Any area of natural habitat of a CR ecosystem type | **Very High** - Very large (> 100 ha) intact area for any conservation status of ecosystem type or > 5 ha for CR ecosystem types. High habitat connectivity serving as functional ecological corridors, limited road network between intact habitat patches. No or minimal current negative ecological impacts with no signs of major past disturbance (e.g. ploughing). | **High -** Habitat that can recover relatively quickly (~ 5–10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a high likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a high likelihood of returning to a site once the disturbance or impact has been removed. | **Very High** |
| Intact Mountain Fynbos | **Very High-** Any area of natural habitat of a CR ecosystem type | **Very High** - Very large (> 100 ha) intact area for any conservation status of ecosystem type or > 5 ha for CR ecosystem types. High habitat connectivity serving as functional ecological corridors, limited road network between intact habitat patches. No or minimal current negative ecological impacts with no | **High -** Habitat that can recover relatively quickly (~ 5–10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a high likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a high likelihood of returning to a site once the disturbance or impact has been removed. | **Very High** |

| | | | | |
|---|---|---|---|---|
| | | signs of major past disturbance (e.g. ploughing). | | |
| Erosion Field | **Very High-** Any area of natural habitat of a CR ecosystem type | **Medium** - Mostly minor current negative ecological impacts with some major impacts and a few signs of minor past disturbance. Moderate | **High** - Habitat that can recover relatively quickly (~ 5–10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a high likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a high likelihood of returning to a site once the disturbance or impact has been removed. | **Very High** |

# 9. IMPACT ASSESSMENT

The impact assessment evaluates the nature and magnitude of impacts likely to result from the proposed development on the receiving environment, specifically the vegetation, ecological processes, habitats, and species of conservation concern. Impacts are assessed for: (a) the No-Go alternative; and (b) the direct, indirect, and cumulative impacts of the proposed project. Impacts are considered separately for the construction and operational phases, and are rated in relation to the site's ecological sensitivity and the anticipated loss or degradation of indigenous vegetation.

The proposed construction design layouts, which include two alternatives. These are both assessed here. The impact assessment methodology is explained in detail in Appendix 2.

## 9.1. 'NO GO' OR NO DEVELOPMENT SCENARIO

The No-Go alternative, i.e. no rehabilitation project/status quo remains, assesses the likely future condition of the receiving environment without any construction or operational activities associated with the proposed road rehabilitation. This scenario assumes continuation of the current ecological trends and processes.

Under the No-Go alternative, the impact on fauna resources is rated **Medium negative**. Without slope stabilisation, the road prism and adjacent mountain slope are expected to experience progressive and potentially accelerating erosion. This would result in ongoing loss of vegetation through landslides/deposition of scree material, thereby impact faunal habitat along the watercourse. Furthermore, it is likely that another significant flood event will result in the temporary loss of wetland habitat downslope of the road.

## 9.2. DIRECT IMPACTS

Direct impacts are those that would occur as a direct result of the proposed rehabilitation. It should be noted that both alternatives for the proposed rehabilitation provided by the client have the same footprint and therefore are both estimated to have the same associated impacts. Direct impacts of the proposed rehabilitation include the following:

1. Loss of habitat likely to support species of conservation concern.
2. Potential loss of species of conservation concern
3. Disturbance to faunal species from noise/construction/human presence.
4. Potential reduced ecological functioning of receiving environment

### 9.2.1 Construction Phase

The majority of the direct impacts are expected to occur during this phase of the project. The loss of habitats likely to support SCC are expected to occur during this period, as would any loss of SCC or disturbance to faunal species due to construction. Prior to mitigation, it is assumed that the direct impacts expected to occur during the construction phase is **medium negative** (Table 13).

### 9.2.1 Operational Phase

Two of the direct impacts are expected to occur during this phase; disturbance to faunal species and potential reduced ecological functioning (Table 13). Given that the road has already impacted the ecological functioning of the area, alongside the disturbance associated with anthropogenic presence (traffic noise, human presence, litter) it is assumed that these impacts are expected to be **Very Low** to **Negligible.**

**Table 13.** Impact table for potential (1) Loss of habitat likely to support SCC (2) Potential loss of SCC, (3) Disturbance to Faunal SCC, and (4) Potential for reduced ecological functioning of receiving environment, during the construction and operational phase of the proposed rehabilitation. Also assessed is (5) No Go option.

| Ref: | Project phase | Impact | Without mitigation | | | | | | With mitigation | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Nature | Duration | Extent | Intensity | Probability | Significance | Nature | Duration | Extent | Intensity | Probability | Significance |
| 1 | Construction | Loss of habitat likely to support SCC | Negative | Medium term | Local | Moderate | Certain / definite | Moderate - negative | Negative | Medium term | Limited | Low | Certain / definite | Minor - negative |
| 2 | Construction | Potential loss of SCC | Negative | Medium term | Limited | Low | Probable | Minor - negative | Negative | Short term | Limited | Low | Probable | Negligible - negative |
| 3 | Construction | Anthropogenic disturbance (construction noise/human presence) | Negative | Brief | Limited | High | Certain / definite | Minor - negative | Negative | Brief | Limited | Moderate | Almost certain / Highly probable | Minor - negative |
| 4 | Operation | Anthropogenic disturbance (usage of the road) | Negative | On-going | Limited | Low | Almost certain / Highly probable | Minor - negative | Negative | On-going | Limited | Low | Almost certain / Highly probable | Minor - negative |
| 5 | Operation | Reduced ecological function | Negative | Permanent | Limited | Low | Almost certain / Highly probable | Minor - negative | Negative | Permanent | Limited | Low | Almost certain / Highly probable | Minor - negative |
| 6 | Construction | No Go Scenario | Negative | On-going | Local | High | Certain / definite | Moderate - negative | Negative | On-going | Local | High | Certain / definite | Moderate - negative |

### 9.3 INDIRECT IMPACTS

Indirect impacts are expected to occur primarily during the construction phase stage and affect areas beyond the boundaries of the site. Examples include loss of diversity due to loss of connectivity between habitats or increased sediment load in water courses. The project is estimated to have few indirect impacts, with the exception of increased sediment in the stream downslope of the Steenbras Pass Road due to construction activities and removal of vegetation. This impact is expected to be local, primarily affecting the lower reaches of the stream; and short lived, as winter rains are likely to wash away loose material post construction.

### 9.4 CUMULATIVE IMPACTS

Cumulative impacts are those impacts linked to the cumulative loss of SCC or habitats that can support SCC, accounting for development within the surrounding landscape. Although the exact extent of the construction footprint is not known, the proposed project would result in the permanent loss of approximately 1000 m2 (0.1 ha) of Kogelberg Sandstone Fynbos, representing 0.0001.% of the remaining national extent (76 795 ha remaining).

On a purely numerical basis, the contribution of the proposed project to cumulative loss as a percentage of the ecosystem is Very Low Negative. However, this percentage-based approach can be misleading when considered in isolation. The impacts on species of conservation concern (SCC), ecological processes, (Critical Biodiversity Areas (CBAs), are not insignificant when viewed cumulatively. Cumulative impacts must therefore be evaluated holistically and not reduced to simple proportional loss of vegetation-type extent.

The habitat in the study area is largely considered intact, with areas of the site classified as semi-intact due to erosion caused by extreme precipitation events. As the area likely to be impacted by the rehabilitation activity is small, and will occur primarily within the eroded area of the site the cumulative impact of the potential loss of habitat for faunal SCC is likely to be low.

### 9.5 MITIGATION

Mitigation options are generally considered in terms of the following mitigation hierarchy: (1) avoidance, (2) minimization, (3) restoration and (4) offsets. A distinction is also made between essential mitigation (non-negotiable mitigation measures that lower the impact significance) and non-essential mitigation (best practise measures that do not lower the impact significance).

In terms of essential mitigation measures the following actions are necessary to reduce the impact of the development:

1. Construction activities should be restricted to the summer months, outside of winter rain season.
2. Strict adherence to guidelines regarding use of pesticides and herbicides. Neither herbicide nor pesticides shall be used within 2m of wetland or riparian habitat.
3. Mark off the areas that are not going to be developed prior to undertaking any works, and ensure that no unnecessary loss of adjacent vegetation occurs.
4. Strictly limit the construction footprint, to the greatest extent possible, to minimise habitat loss.
5. Mark off the areas that are not going to be developed prior to undertaking any works, and ensure that no unnecessary loss of adjacent vegetation occurs.
6. Sites for building material stocks, vehicles, toilets etc must be clearly marked and restricted to the developmental footprint, existing roads or existing disturbed areas.
7. ECO (or relevant person) to walk ahead of clearing construction machinery and move slow moving species, e.g. tortoises, out of harms way and into suitable neighbouring habitat.
8. A snake handler should be on call to provide removal and relocation service should any snakes be found on site.
9. If night lighting is applicable, night lighting must be minimised and if required, only down lighting must be used and placed as low as practical and low light emitting bulbs (LED's).
10. Vehicles and machinery must meet best practice standards as this will minimise noise and vibrations. Where possible hand tools or smaller machinery is recommended to reduce noise, vibrations, or soil compaction (especially within areas defined as wetlands)
11. A clause must be included in contracts for ALL personnel working on site stating that: "*no wild animals will be hunted, killed, poisoned or captured. No wild animals will be imported into, exported from or transported in or through the province. No wild animals will be sold, bought, donated and no person associated with the development will be in possession of any live wild animal, carcass or anything manufactured from the carcass*." A clause relating to fines, possible dismissal and legal prosecution must be included should any of the above transgressions occur for SCC.

# 10. CONCLUSIONS AND RECOMMENDATIONS

The entirety of the study area has been identified as a site of **High** sensitivity under the animal species theme category within the Screening Tool. The basis of this sensitivity is the possible presence of five Species of Conservation Concern highlighted by the screening tool. The preliminary desktop assessment identified an additional 25 SCC that could occur within 20km of the study area and thus could potentially occur. The likelihood of these species occurring within the site is assessed in Table 2. The results of the in-field visit reveal that the quality of the habitat across the study area is of **High** sensitivity, with the majority of the site described as intact. The site is currently mapped as a Conservation Area under the City of Cape Town Biodiversity Network (2024).

No species of conservation concern were confirmed on the site, however the habitat at the site is deemed likely to 13 SCC, including one species identified by the Screening Tool (Verreaux's Eagle *Aquila verreauxii*). Due to the presence of habitat deemed likely to support SCC, an impact assessment has been conducted to evaluate the effect of the proposed rehabilitation on potential and SCC.

Both design alternatives for the proposed rehabilitation have the same footprint and thus been evaluated as one project. Under the No Go alternative, the area is likely to experience further erosion, resulting in the undermining and subsequent collapse of the road. The impact this would have on the study area is deemed to be **High Negative**. As the proposed rehabilitation area at the site is highly localised, within 5-10m of the road edge, and the receiving environment *i.e.* the eroded area downslope of the road, is already disturbed and offers limited habitat for SCC at the site the impact of the proposed development, which will result in limited clearance of vegetation and briefly elevated anthropogenic disturbance to the site is deemed to have a **Moderately Negative** impact without mitigation, which is reduced to **Low Negative** impact with mitigation.

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# APPENDIX 1: ANIMAL SPECIES LIST FOR STEENBRAS ROAD REHABILITATION, GORDONS BAY

**Table 1.** Species list for Steenbras Road Rehabilitation project. Note that "Observed" indicates that this species was either seen or heard by this author. Bird species for this location were compiled from South African Bird Atlas Project (SABAP) for pentad 3410_1850.

| Class | Species | Common Name | Present/recorded |
|---|---|---|---|
| Amphibia | *Amietia fuscigula* | Cape River Frog | Yes |
| Amphibia | *Arthroleptella villiersi* | De Villiers's Moss Frog | |
| Amphibia | *Breviceps montanus* | Mountain Rain Frog | |
| Amphibia | *Heleophryne purcelli* | Cape Ghost Frog | |
| Amphibia | *Hyperolius marmoratus* | Painted Reed Frog | |
| Amphibia | *Poyntonia paludicola* | Montane Marsh Frog | |
| Amphibia | *Sclerophrys capensis* | Raucous Toad | |
| Amphibia | *Strongylopus bonaespei* | Banded Stream Frog | Yes |
| Amphibia | *Strongylopus grayii* | Clicking Stream Frog | Yes |
| Amphibia | *Xenopus laevis* | Common Platanna | |
| Aves | *Accipiter rufiventris* | Rufous-breasted Sparrowhawk | |
| Aves | *Alopochen aegyptiaca* | Egyptian Goose | |
| Aves | *Anas sparsa* | African Black Duck | |
| Aves | *Anas undulata* | Yellow-billed Duck | |
| Aves | *Andropadus importunus* | Sombre Greenbul | |
| Aves | *Anhinga rufa* | African Darter | |
| Aves | *Anthobaphes violacea* | Orange-breasted Sunbird | Yes |
| Aves | *Anthus leucophrys* | Plain-backed Pipit | Yes |
| Aves | *Apalis thoracica* | Bar-throated Apalis | |
| Aves | *Apus affinis* | Little Swift | |
| Aves | *Apus barbatus* | African Black Swift | |
| Aves | *Apus caffer* | White-rumped Swift | |
| Aves | *Aquila verreauxii* | Verreaux's Eagle | |
| Aves | *Batis capensis* | Cape Batis | |
| Aves | *Bostrychia hagedash* | Hadada Ibis | |

| | | | |
|---|---|---|---|
| Aves | *Bubulcus ibis* | Western Cattle Egret | |
| Aves | *Buteo buteo* | Common Buzzard | |
| Aves | *Buteo rufofuscus* | Jackal Buzzard | |
| Aves | *Cecropis cucullata* | Greater Striped Swallow | |
| Aves | *Chaetops frenatus* | Cape Rockjumper | |
| Aves | *Chalcomitra amethystina* | Amethyst Sunbird | |
| Aves | *Charadrius marginatus* | White-fronted Plover | |
| Aves | *Chroicocephalus cirrocephalus* | Grey-headed Gull | |
| Aves | *Chroicocephalus hartlaubii* | Hartlaub's Gull | |
| Aves | *Chrysococcyx klaas* | Klaas's Cuckoo | |
| Aves | *Cinnyris chalybeus* | Southern Double-collared Sunbird | Yes |
| Aves | *Cisticola fulvicapilla* | Neddicky | Yes |
| Aves | *Cisticola subruficapilla* | Grey-backed Cisticola | |
| Aves | *Cisticola tinniens* | Levaillant's Cisticola | Yes |
| Aves | *Coccopygia melanotis* | Swee Waxbill | |
| Aves | *Colius colius* | White-backed Mousebird | |
| Aves | *Colius striatus* | Speckled Mousebird | |
| Aves | *Columba guinea* | Speckled Pigeon | Yes |
| Aves | *Columba livia* | Rock Dove | Yes |
| Aves | *Corvus albicollis* | White-necked Raven | Yes |
| Aves | *Corvus albus* | Pied Crow | |
| Aves | *Corvus capensis* | Cape Crow | Yes |
| Aves | *Cossypha caffra* | Cape Robin-Chat | Yes |
| Aves | *Coturnix coturnix* | Common Quail | |
| Aves | *Crithagra flaviventris* | Yellow Canary | |
| Aves | *Crithagra gularis* | Streaky-headed Seedeater | |
| Aves | *Crithagra sulphurata* | Brimstone Canary | |
| Aves | *Crithagra totta* | Cape Siskin | Yes |
| Aves | *Cryptillas victorini* | Victorin's Warbler | |
| Aves | *Cuculus clamosus* | Black Cuckoo | |

| | | | |
|---|---|---|---|
| Aves | *Dendropicos griseocephalus* | Olive Woodpecker | |
| Aves | *Dicrurus adsimilis* | Fork-tailed Drongo | Yes |
| Aves | *Emberiza capensis* | Cape Bunting | |
| Aves | *Euplectes capensis* | Yellow Bishop | |
| Aves | *Falco peregrinus* | Peregrine Falcon | |
| Aves | *Falco rupicolus* | Rock Kestrel | |
| Aves | *Geocolaptes olivaceus* | Ground Woodpecker | |
| Aves | *Haematopus moquini* | African Oystercatcher | |
| Aves | *Haliaeetus vocifer* | African Fish Eagle | |
| Aves | *Hieraaetus pennatus* | Booted Eagle | |
| Aves | *Hirundo rustica* | Barn Swallow | |
| Aves | *Indicator minor* | Lesser Honeyguide | |
| Aves | *Laniarius ferrugineus* | Southern Boubou | |
| Aves | *Lanius collaris* | Southern Fiscal | |
| Aves | *Larus dominicanus* | Kelp Gull | |
| Aves | *Megaceryle maxima* | Giant Kingfisher | |
| Aves | *Melaenornis silens* | Fiscal Flycatcher | |
| Aves | *Microcarbo africanus* | Reed Cormorant | |
| Aves | *Microcarbo coronatus* | Crowned Cormorant | |
| Aves | *Milvus aegyptius* | Yellow-billed Kite | |
| Aves | *Mirafra apiata* | Cape Clapper Lark | |
| Aves | *Monticola explorator* | Sentinel Rock-Thrush | |
| Aves | *Monticola rupestris* | Cape Rock-Thrush | Yes |
| Aves | *Morus capensis* | Cape Gannet | |
| Aves | *Motacilla capensis* | Cape Wagtail | Yes |
| Aves | *Muscicapa adusta* | African Dusky Flycatcher | |
| Aves | *Nectarinia famosa* | Malachite Sunbird | |
| Aves | *Numida meleagris* | Helmeted Guineafowl | |
| Aves | *Oenanthe familiaris* | Familiar Chat | Yes |
| Aves | *Onychognathus morio* | Red-winged Starling | Yes |

| | | | |
|---|---|---|---|
| Aves | *Passer diffusus* | Southern Grey-headed Sparrow | |
| Aves | *Passer domesticus* | House Sparrow | |
| Aves | *Passer melanurus* | Cape Sparrow | |
| Aves | *Phalacrocorax capensis* | Cape Cormorant | |
| Aves | *Phalacrocorax lucidus* | White-breasted Cormorant | |
| Aves | *Phalacrocorax neglectus* | Bank Cormorant | |
| Aves | *Phylloscopus trochilus* | Willow Warbler | |
| Aves | *Plectropterus gambensis* | Spur-winged Goose | |
| Aves | *Plegadis falcinellus* | Glossy Ibis | |
| Aves | *Ploceus capensis* | Cape Weaver | |
| Aves | *Ploceus velatus* | Southern Masked Weaver | |
| Aves | *Polyboroides typus* | African Harrier-Hawk | |
| Aves | *Prinia maculosa* | Karoo Prinia | Yes |
| Aves | *Procellaria aequinoctialis* | White-chinned Petrel | |
| Aves | *Promerops cafer* | Cape Sugarbird | Yes |
| Aves | *Psalidoprocne pristoptera* | Black Saw-wing | |
| Aves | *Pternistis capensis* | Cape Spurfowl | Yes |
| Aves | *Ptyonoprogne fuligula* | Rock Martin | |
| Aves | *Pycnonotus capensis* | Cape Bulbul | |
| Aves | *Riparia paludicola* | Brown-throated Martin | |
| Aves | *Saxicola torquatus* | African Stonechat | |
| Aves | *Scleroptila afra* | Grey-winged Francolin | |
| Aves | *Scopus umbretta* | Hamerkop | |
| Aves | *Serinus canicollis* | Cape Canary | |
| Aves | *Spheniscus demersus* | African Penguin | |
| Aves | *Sphenoeacus afer* | Cape Grassbird | Yes |
| Aves | *Spilopelia senegalensis* | Laughing Dove | |
| Aves | *Stenostira scita* | Fairy Flycatcher | |
| Aves | *Stercorarius antarcticus* | Subantarctic Skua | |
| Aves | *Stercorarius longicaudus* | Long-tailed Jaeger | |

| | | | |
|---|---|---|---|
| Aves | *Stercorarius parasiticus* | Parasitic Jaeger | |
| Aves | *Sterna hirundo* | Common Tern | |
| Aves | *Sterna paradisaea* | Arctic Tern | |
| Aves | *Streptopelia capicola* | Ring-necked Dove | |
| Aves | *Streptopelia semitorquata* | Red-eyed Dove | |
| Aves | *Sturnus vulgaris* | Common Starling | |
| Aves | *Tachymarptis melba* | Alpine Swift | |
| Aves | *Telophorus zeylonus* | Bokmakierie | |
| Aves | *Terpsiphone viridis* | African Paradise Flycatcher | |
| Aves | *Thalasseus bergii* | Greater Crested Tern | |
| Aves | *Thalasseus sandvicensis* | Sandwich Tern | |
| Aves | *Tricholaema leucomelas* | Acacia Pied Barbet | |
| Aves | *Turdus olivaceus* | Olive Thrush | |
| Aves | *Turnix hottentottus* | Fynbos Buttonquail | |
| Aves | *Urocolius indicus* | Red-faced Mousebird | |
| Aves | *Vanellus coronatus* | Crowned Lapwing | |
| Aves | *Zosterops virens* | Cape White-eye | |
| Mammalia | *Aonyx capensis* | African Clawless Otter | |
| Mammalia | *Bathyergus suillus* | Cape Dune Molerat | |
| Mammalia | *Cryptomys hottentotus* | Common Molerat | |
| Mammalia | *Elephantulus edwardii* | Cape Rock Sengi | |
| Mammalia | *Genetta tigrina* | Cape Genet | |
| Mammalia | *Herpestes ichneumon* | Large Grey Mongoose | |
| Mammalia | *Herpestes pulverulentus* | Cape Grey Mongoose | |
| Mammalia | *Hystrix africaeaustralis* | Porcupine | |
| Mammalia | *Ictonyx striatus* | Striped Polecat | |
| Mammalia | *Lepus saxatilis* | Scrub Hare | |
| Mammalia | *Micaelamys namaquensis* | Namaqua Rock Rat | |
| Mammalia | *Myosorex varius* | Forest Shrew | |
| Mammalia | *Oreotragus oreotragus* | Klipspringer | |

| | | | |
|---|---|---|---|
| Mammalia | *Panthera pardus* | Leopard | |
| Mammalia | *Papio ursinus ursinus* | Chacma Baboon | Yes |
| Mammalia | *Procavia capensis* | Dassie | |
| Mammalia | *Pronolagus saundersiae* | Southern Red Rockrabbit | |
| Mammalia | *Raphicerus melanotis* | Grysbok | |
| Mammalia | *Rhabdomys pumilio* | Cape Striped Fieldmouse | |
| Mammalia | *Sylvicapra grimmia* | Common Duiker | |
| Reptilia | *Acontias meleagris* | Cape Legless Skink | |
| Reptilia | *Afrogecko porphyreus* | Marbled Leaf-toed Gecko | |
| Reptilia | *Agama atra* | Southern Rock Agama | Yes |
| Reptilia | *Alopecion guttatum* | Spotted Rock Snake | |
| Reptilia | *Bitis arietans* | Puffadder | |
| Reptilia | *Bitis atropos* | Berg Adder | |
| Reptilia | *Bradypodion pumilum*\ | Cape Dwarf Chameleon | |
| Reptilia | *Chamaesaura anguina* | Cape Snake Lizard | |
| Reptilia | *Chersina angulata* | Angulate Tortoise | |
| Reptilia | *Cordylus cordylus* | Cape Girdled Lizard | |
| Reptilia | *Dispholidus typus* | Boomslang | |
| Reptilia | *Duberria lutrix* | Common Slug-Eater | |
| Reptilia | *Hemicordylus nebulosus* | Dwarf Crag Lizard | |
| Reptilia | *Hemidactylus mabouia* | Tropical House Gecko | |
| Reptilia | *Homopus areolatus* | Parrotbeak Padloper | |
| Reptilia | *Homoroselaps lacteus* | Spotted Harlequin Snake | |
| Reptilia | *Lamprophis aurora* | Aurora House Snake | |
| Reptilia | *Lamprophis fuscus* | Yellow-bellied House Snake | |
| Reptilia | *Lycodonomorphus rufulus* | Common Brown Water Snake | |
| Reptilia | *Lygodactylus capensis* | Common Dwarf Gecko | |
| Reptilia | *Naja nivea* | Cape Cobra | |
| Reptilia | *Pachydactylus geitje* | Ocellated Thicktoe Gecko | |
| Reptilia | *Pelomedusa galeata* | Cape Terrapin | |

| | | | |
|---|---|---|---|
| Reptilia | *Psammophis crucifer* | Cross-marked Sand Snake | |
| Reptilia | *Psammophis notostictus* | Karoo-Sweepslang | |
| Reptilia | *Psammophylax rhombeatus* | Rhombic Skaapsteker | |
| Reptilia | *Pseudaspis cana* | Mole Snake | |
| Reptilia | *Pseudocordylus microlepidotus* | Cape Crag Lizard | Yes |
| Reptilia | *Scelotes bipes* | Common Burrowing Skink | |
| Reptilia | *Tetradactylus seps* | Short-legged Seps | |
| Reptilia | *Trachylepis capensis* | Cape Skink | |
| Reptilia | *Trachylepis homalocephala* | Red-sided Skink | |

# APPENDIX 2: IMPACT ASSESSMENT METHODOLOGY

**Impact Assessment Methodology provided by Zutari**

This section outlines the proposed method for assessing the significance of the potential environmental impacts. For each predicted impact, criteria are ascribed, and these include the intensity (size or degree scale), which also includes the type of impact, being either a positive or negative impact; the duration (temporal scale); and the extent (spatial scale), as well as the probability (likelihood). The methodology is quantitative, whereby professional judgement is used to identify a rating for each criteria based on a seven-point scale (refer to Table 1); and the significance is auto-generated using a spreadsheet through application of the calculations in Figure 1. Specialists can comment where they disagree with the auto-calculated impact significance rating.

**Calculations**

For each predicted impact, certain criteria are applied to establish the likely **significance** of the impact, firstly in the case of no mitigation being applied and then with the most effective mitigation measure(s) in place.

These criteria include the **intensity** (size or degree scale), which also includes the **type** of impact, being either a positive or negative impact; the **duration** (temporal scale); and the **extent** (spatial scale). These numerical ratings are used in an equation whereby the **consequence** of the impact can be calculated. Consequence is calculated as follows:

**Consequence = type x (intensity + duration + extent)**

To calculate the significance of an impact, the **probability** (or likelihood) of that impact occurring is applied to the consequence.

**Significance = consequence x probability**

Figure 1: Calculation of significance

Table 1: Assessment criteria for the evaluation of impacts

| Criteria | Numerical Rating | Category | Description |
|---|---|---|---|
| Duration | 1 | Immediate | Impact will self-remedy immediately |
| | 2 | Brief | Impact will not last longer than 1 year |
| | 3 | Short term | Impact will last between 1 and 5 years |
| | 4 | Medium term | Impact will last between 5 and 10 years |
| | 5 | Long term | Impact will last between 10 and 15 years |
| | 6 | On-going | Impact will last between 15 and 20 years |
| | 7 | Permanent | Impact may be permanent, or in excess of 20 years |
| Extent | 1 | Very limited | Limited to specific isolated parts of the site |
| | 2 | Limited | Limited to the site and its immediate surroundings |
| | 3 | Local | Extending across the site and to nearby settlements |
| | 4 | Municipal area | Impacts felt at a municipal level |
| | 5 | Regional | Impacts felt at a regional level |
| | 6 | National | Impacts felt at a national level |
| | 7 | International | Impacts felt at an international level |

| Criteria | Numerical Rating | Category | Description |
|---|---|---|---|
| **Intensity** | **1** | **Negligible** | Natural and/ or social functions and/ or processes are negligibly altered |
| | **2** | **Very low** | Natural and/ or social functions and/ or processes are slightly altered |
| | **3** | **Low** | Natural and/ or social functions and/ or processes are somewhat altered |
| | **4** | **Moderate** | Natural and/ or social functions and/ or processes are moderately altered |
| | **5** | **High** | Natural and/ or social functions and/ or processes are notably altered |
| | **6** | **Very high** | Natural and/ or social functions and/ or processes are majorly altered |
| | **7** | **Extremely high** | Natural and/ or social functions and/ or processes are severely altered |
| **Probability** | **1** | **Highly unlikely / None** | Expected never to happen |
| | **2** | **Rare / improbable** | Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere |
| | **3** | **Unlikely** | Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur |
| | **4** | **Probable** | Has occurred here or elsewhere and could therefore occur |
| | **5** | **Likely** | The impact may occur |
| | **6** | **Almost certain / Highly probable** | It is most likely that the impact will occur |
| | **7** | **Certain / Definite** | There are sound scientific reasons to expect that the impact will definitely occur |

When assessing impacts, broader considerations are also taken into account. These include the level of confidence in the assessment rating; the reversibility of the impact; and the irreplaceability of the resource as set out in Table 2, Table 3 and Table 4, respectively.

Table 2: Definition of confidence ratings

| Category | Description |
|---|---|
| **Low** | Judgement is based on intuition |
| **Medium** | Determination is based on common sense and general knowledge |
| **High** | Substantive supportive data exists to verify the assessment |

Table 3: Definition of reversibility ratings

| Category | Description |
|---|---|
| Low | The affected environment will not be able to recover from the impact - permanently modified |
| Medium | The affected environment will only recover from the impact with significant intervention |
| High | The affected environmental will be able to recover from the impact |

**Table 4: Definition of irreplaceability ratings**

| Category | Description |
|---|---|
| Low | The resource is not damaged irreparably or is not scarce |
| Medium | The resource is damaged irreparably but is represented elsewhere |
| High | The resource is irreparably damaged and is not represented elsewhere |

# APPENDIX 3: ABBREVIATED CURRICULUM VITAE: ADAM LABUSCHAGNE

**Experience**

- Terrestrial and aquatic ecological field experience across a wide range of biomes including Tropical Asia, Tempereate Europe, and the CFR
- Data management and analysis
- Experience with statisical and GIS programs including R and QGIS.
- Species distribution and Ecoloigcal Niche modelling experience.
- MSc Thesis Title "*Using satellite telemetry to understand the movement ecology and diving behavioir of Caretta caretta in the Cape Verde Archipelago"*

**Career History**

- 2023 – present: Associate ecologist at Capensis Ecological Surveys
- August 2023 – present: Associate Ecologist and Field Technician at Inkululeko Wildlife Services
- March 2023 – present: Independent ecology specialist and associate of Bergwind Botanical Surveys & Tours CC.
- December 2020-February 2023: Field Manager and Research Officer at Human Wildlife Solutions.

**Education and qualifications**

- Pr. Nat. Sci. Zoology (133686)
- MSc: Ecology and Evolutionary Biology – Queen Mary University London (2018-2019)
- BSc: Zoology – Roehampton University (2015 – 2018)

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